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## A Whole School, Whole Community, Whole Child Approach to Support Student Physical Activity and Nutrition: Introduction/Methods

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### Abstract

**BACKGROUND:** We introduce the Whole School, Whole Community, Whole Child approach to supporting student and school staff physical activity and nutrition and describe the methods used to generate the evidence synthesized across the special issue articles.

**METHODS:** A 2-phase literature review search included a search of systematic reviews (2010–2018) for individual qualifying articles (Phase 1) and a search for individual articles on topics not addressed by a review (2010–2020) or that needed an update because they were in a review that was older (2010–2016) or showed insufficient evidence (Phase 2). Research librarians developed search strategies. In each phase, pairs of subject matter experts applied criteria to review abstracts and full-text articles and extracted data using standardized forms. We included 314 articles, describing 293 studies.

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#### Conflict of Interest

The authors have no conflict of interest to declare.

#### SUPPORTING INFORMATION

The following Supporting Information is available for this article:

**Table S1:** Summary of Machine Learning Process for Abstract Screening in Phase 2.

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

#### 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.

**FINDINGS:** Most of the included studies looked at elementary or secondary school level interventions; 51% were rated poor quality, and few took place in a rural setting.

**IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY:** Most of the identified studies engaged majority minority or racially/ethnically diverse schools, suggesting that these interventions are feasible in a variety of settings.

**CONCLUSIONS:** This collection of 10 articles identifies evidence-based interventions, gaps in research, and implications for health equity.

### Keywords

schools; students; child; physical activity; nutrition; systematic reviews; diet quality

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Education and health are intertwined in the short term and for a lifetime. Educational attainment is a social determinant of health with intergenerational implications.<sup>1-3</sup> More immediately, student physical and emotional health influence attendance and readiness to learn, a priority for schools.<sup>4,5</sup> As part of required statewide accountability systems in the US public school system, 36 states, the District of Columbia, and Puerto Rico have chosen to monitor and plan to address chronic absenteeism.<sup>6</sup>

The Whole School, Whole Community, Whole Child (WSCC) model addresses non-academic barriers to learning and holds at its core that a student must feel safe, supported, challenged, engaged, and healthy to be ready for school.<sup>7</sup> In the depiction of this model, community is wrapped around the elements of school and school success because schools and communities influence one another (Figure 1).

In this special issue, we focus on opportunities throughout the WSCC model to increase physical activity (PA) and intake of nutritious foods among students and staff. PA offers children and adolescents myriad benefits, including improved cognitive functioning, cardiorespiratory and muscular fitness, cardiometabolic health, bone health, and lower risk of depression.<sup>4,8</sup> School-based offerings such as classroom PA, recess, and physical education (PE) have been linked with positive classroom behaviors, and extracurricular PA has been associated with lower student dropout rates.<sup>4,9</sup> Although some studies show null associations between school-based PA and measures of academic achievement like grades or test scores, a negative relationship has not been identified, suggesting that school investments in PA do not detract from learning.<sup>9,10</sup> Moreover, PA can contribute to school climate; for example, recess can offer opportunities for prosocial behavior like conflict resolution and peer interaction.<sup>11</sup> Schools are also a nutrition hub, serving breakfast and lunch and often serving or sponsoring snacks or meals after school and in the summer, contributing significantly to children's overall dietary intake, especially children in communities experiencing high poverty where school meals are offered at no cost to all students. A nutritionally adequate diet is essential for physical growth and development, immunity, and cognition in the short term and has an important role to play in preventing chronic disease over the life course.<sup>12,13</sup> School environments that support nutrition and PA may help students practice and adopt health behaviors known to reduce risk of chronic disease later in life.

The COVID-19 pandemic elevated public awareness of the role that schools play in providing children with structure and consistent opportunities to learn, eat healthy foods, move, and connect with peers and trusted adults outside the home. School staff were widely, and formally,<sup>14</sup> recognized as essential workers whose jobs were stressful and whose retention mattered. The pandemic also provided a stark reminder that physical inactivity, excess weight, and certain chronic health conditions including asthma and diabetes can place individuals at heightened risk of serious infections and illness.<sup>15,16</sup> Unfortunately, measures of PA levels and dietary intake in youth—already falling short of recommendations<sup>8,12,17</sup>—appear to have largely worsened between 2019 and 2021.<sup>18</sup>

As schools plan for recovery, they have an unprecedented opportunity to access funding for school improvements and invest in strategies known to work.<sup>19,20</sup> Since the publication of *School Health Guidelines to Promote Healthy Eating and Physical Activity* (2011),<sup>21</sup> the evidence base has continued to expand and reflect a rapidly changing context, including the adoption of federal nutrition standards for school meals and competitive foods (eg, foods sold during school hours a la carte, or through vending machines, fundraisers, or school stores)<sup>22,23</sup>; limitations on what types of foods and beverages can be marketed in schools<sup>24</sup>; requirements that school districts evaluate the implementation of their school wellness policies and make results public<sup>24</sup>; the WSCC framework<sup>7</sup>; widespread availability of broadband internet and use of internet-enabled devices and applications<sup>25</sup>; and increased recognition of sedentary behavior as a distinct risk factor for chronic disease.<sup>26,27</sup>

This special issue, featuring this overview; 7 systematic reviews; 1 scoping review; and a commentary, aims to summarize evidence published since 2010 around school-based approaches to support student and staff PA and consumption of nutritious foods, and to identify what this means for research and practice moving forward. Six overarching research questions guide this special issue.

- What changes in the school setting (eg, policies, programs, instructional practices, physical modifications) increase the availability of nutritious foods, decrease the availability of sugar sweetened beverages, and increase opportunities for PA in schools?
- What changes to the school setting lead to increases in student PA and diet quality?
- How can families and communities be engaged in these changes?
- What insights from employee wellness interventions are transferrable to school settings and personnel?
- What gaps in the evidence base need to be addressed to further guide adoption of evidence-based interventions?
- What insights can we gain from school-based interventions around diet and PA that were specifically tailored for certain student or staff populations (eg, race/ethnicity, gender, age)? What voices/communities/constituencies are missing?

## METHODS

This article presents the overarching approach we used to identify the evidence that the review articles in this special issue synthesized to answer these questions. We consulted the PRISMA checklist when developing and reporting on the methodology and results of this review.<sup>28</sup> Our evidence sources were intervention evaluations from peer-reviewed research, Community Preventive Services Task Force (CPSTF) recommendations, and the US Department of Agriculture School Nutrition and Meal Cost Study, an impact evaluation of federal school nutrition programs. A team of 8 to 10 core staff were involved in the entire process, which included 2 phases: a search of systematic reviews for individual qualifying articles (2010–2018, Phase 1), followed by a search for individual articles addressing topics that were not addressed by a sufficiently relevant and recent review (2017 and newer) or if the CPSTF concluded insufficient evidence given too few articles (Phase 2). The phase 1 search was conducted in 2018 and included articles published 2010 and later to include publications that could have reflected components from coordinated school health, a framework that preceded the WSCC model and included PE and nutrition services components. Both phases included developing a search strategy with research librarians and applying criteria to review abstracts and full-text articles. Subject matter expert (SME) pairs extracted data from articles identified in each phase using a standardized form and process described below. We did not register our systematic review protocol.

### Identifying Articles

**Phase 1: review articles.**—Phase 1 involved a library search of systematic reviews published from 2010 to 2018 and a hand search of the Guide to Community Preventive Services website (The Community Guide)<sup>29</sup> to identify systematic reviews that aligned with our research questions related to nutrition and PA in school settings.

Research librarians developed search strategies for the review of reviews (January 2010 to June or October 2018, depending on the topic). All searches queried Medline (OVID), PsycInfo (OVID), CINAHL (EBSCO), Scopus, ERIC (ProQuest), Education Database, and Sociological Abstracts. The topic-specific search strategies that librarians developed to find interventions for improving PA and dietary outcomes among K-12 students are reported within the contributing articles in this special issue. We pooled search results rather than conducting separate searches for broader topics (ie, health education, coordinated approaches) because of overlapping keywords; during the screening stage described below, SMEs “tagged” articles by topic.

The library search identified a total of 3813 abstracts and SMEs identified 13 additional reviews (Figure 2). When considering the inclusion and exclusion criteria (Table 1), individual SMEs rated abstracts “yes,” “maybe,” or “no.” Articles rated “yes” or “maybe” moved to full-text article screening (n = 497). Pairs of trained reviewers independently rated full-text articles as “include” or “exclude” using the established criteria. An independent third reviewer resolved differences between raters. Full-text screening identified 145 candidate anchor review articles.

Our next steps aimed to identify at least 1 “anchor” review article, that is, a high quality and sufficiently relevant review from which we would extract individual articles that met our criteria, for each topic that aligned with our research questions. Before assessing anchor review article candidates, we researched whether the CPSTF, which conducts systematic reviews, had issued a conclusion (eg, recommend, insufficient evidence, recommend against) on related school health topics by searching the Community Guide website. We identified 8 reviews that either concluded insufficient evidence<sup>30–32</sup> or offered a recommendation that was narrower in scope than our research questions<sup>33–37</sup> and 2 that fully aligned with our research questions: recommendations for school gardening and active transportation to school.<sup>38,39</sup>

To be eligible for consideration as an anchor review article from which we would pull individual studies, reviews had to meet the criteria described in Table 1. SMEs then used a decision tree (Table 2) to assess the 145 systematic reviews and select anchor review articles that were fully aligned with research questions, presented effectiveness data, used relevant outcome measures, and contributed individual “qualifying articles” that met our inclusion criteria.

Through this process, we prioritized 40 systematic reviews. SME pairs evaluated the methodological rigor of these reviews using the Assessing Methodological Quality of Systematic Reviews (AMSTAR 2) tool and excluded 1 that used an inadequate search strategy.<sup>40</sup> We revisited candidate anchor review articles and excluded 14 that overlapped with Community Guide recommendations, contributed fewer relevant articles and/or were older than another candidate reviews, or were less relevant in scope. From the final 25 anchor review articles, SME pairs identified 247 individual qualifying articles that met inclusion criteria based on abstracts. Among these were 3 articles from a school gardening review, which we included because they went beyond the focus of the Community Guide recommendation by incorporating school gardening within a comprehensive school nutrition intervention or providing ample detail about the nutrition education component.<sup>41–44</sup> As described in “Extracting Information From Articles” (below), we excluded 54 articles during the data extraction process, resulting in a total of 193 articles included from Phase 1.

**Phase 2: individual article search.**—Research librarians developed 7 separate searches for individual articles, excluding topics for which we had identified a sufficiently relevant and recent review. We did not conduct searches on topics the Community Guide had addressed through recommendations published from 2010 or more recently that aligned with our research questions (eg, school gardens, classroom PA, active transportation to school). We updated the search strategy for topics from either an older anchor review article (2010–2016) or a Community Guide conclusion of “insufficient evidence,” with the library search beginning from the last search date from that review or conclusion; otherwise we searched for 2010–2020. All searches queried the same databases as in Phase 1. Instead of searching for parent and community engagement interventions, we conducted a scoping review of the articles that were included and then categorized the engagement strategies described and used in those interventions.<sup>45</sup> The COVID-19 pandemic disrupted work and limited staff resources, preventing an update of library searches to be within 2 years of the publication of this special issue.

To be eligible for consideration, articles had to meet the inclusion criteria in Table 1, which were refined to specify which topics were well addressed by existing reviews and recommendations from Phase 1. For example, in Phase 2, we excluded general worksite wellness interventions, but included interventions for school staff because no qualifying articles from Phase 1 included school settings as worksites.

Searches addressing specific PA and nutrition interventions (PA/nutrition in Figure 3) identified 8659 unique abstracts. To reduce the time burden of screening abstracts, we adopted an iterative machine learning (ML) approach,<sup>46</sup> which involved 4 steps: (1) creating a training sample to perform predictions (N = 106; 34 SME-selected “yes” articles and 72 “no” articles from Phase 2 search results); (2) assessing the accuracy of ML predictions (by SME pairs); (3) incorporating additional articles into the iterative ML training sample (those that SME pairs voted to include); (4) testing subsequent performance of our ML approach by drawing random samples (Table S1, Supporting Information). This process identified 465 articles to proceed to full-text screening.

Abstracts from the health education search (N = 2371) were screened separately from PA and nutrition interventions. SME pairs screened each abstract, using eligibility criteria to assign a “no,” “maybe,” or “yes” vote, resulting in the identification of 150 articles for full-text screening.

Pairs of trained reviewers independently rated full-text articles as “include” or “exclude” using the same criteria (Table 1). An independent third reviewer resolved differences between raters. During full-text screening, we identified a total of 19 articles from health education and 145 from PA and nutrition.

### Identifying and Sampling Confirmatory Topics for Extraction

The health education and PA/nutrition searches included overlapping topics, such as nutrition education and OST interventions, and were pooled for the next steps. First, before extracting data, paired SMEs determined whether included articles (1) addressed a novel topic (a topic for which no relevant review articles or recommendations were identified in Phase 1); or (2) were confirmatory, which meant they built on or updated a prior review or existing recommendation.<sup>21,30–32</sup> SMEs coded each article to indicate the primary and, if relevant, secondary topic using the following codes: coordinated policy approach/school health councils/school health advisory councils/local wellness policies, a la carte foods and beverages, vending machines, school stores and snack bars, classroom celebrations and non-food rewards, fundraisers, access to drinking water, PE, physical environment, recess, before- or afterschool programs (OST), family engagement, community engagement, chronic disease self-management, mindfulness, health education, behavioral design, staff professional development/training, marketing, and school climate. Novel topics included mindfulness, competitive foods interventions, classroom celebrations and non-food rewards, recess (primary)/school climate (secondary), PE (primary)/staff professional development (secondary) or novel approaches within PA (eg, apps, videogames, interactive fitness trackers), and all before- or afterschool program (OST) interventions except those solely focused on PA. Relevant competitive food interventions occurred after fall 2014, when “Smart Snacks in Schools” regulations went into effect.

We selected all articles about novel topics for data extraction (n = 74) and created a stratified sample to randomly select articles addressing confirmatory topics, to determine if new studies were consistent with previously established relationships (Figure 3). This sampling approach has been previously used as part of a systematic review process.<sup>47</sup> Ninety articles addressing confirmatory topics were assigned to 11 unique strata: access to drinking water (n = 1); health/nutrition education (n = 22); community engagement (n = 2); coordinated policy approach/school health councils (n = 7); family engagement (n = 1); before- or afterschool programs (OST)/PA (n = 27); recess/physical environment (n = 5); nutrition education/professional development (n = 4); PE (n = 10), recess (n = 9); and school employee wellness (n = 2). For strata that contained 10 or fewer articles, we extracted all articles (9 strata, 41 articles). For the 2 strata with 10 or more articles (health/nutrition education, n = 22; before- or afterschool programs [OST]/PA, n = 27), a contractor randomly selected 10 articles from each stratum in Excel. This process identified 61 articles on confirmatory topics for extraction.

### Extracting Information From Articles

We identified 382 articles for data extraction (Phase 1: 247; Phase 2: 135). Standardized information about each included article was collected and managed using REDCap electronic data capture tools hosted at the Centers for Disease Control and Prevention.<sup>48,49</sup> The forms included study details; participant demographics; an intervention description; intervention components; cross-cutting approaches used (eg, use of rewards, professional development/training); types of outcomes assessed (ie, environmental-level; knowledge, attitudes, perceptions; individual behavioral; anthropometric; secondary outcomes related to PA and nutrition such as sedentary behavior); the direction of significant results; and author conflict of interest and funding disclosures.

Given heterogeneity in outcome measures and reporting, we extracted information about the direction of significant changes, presence of null results, significant differences between arms or participant demographics, and open notes about outcome details. Within the individual articles featured in this special issue, we further refined which of the extracted outcomes were primary outcomes for their respective topic areas and which were secondary.

Reviewers also completed the Effective Public Health Practice Project Risk of Bias (RoB) assessment<sup>50</sup> for articles that did not have an existing RoB (ie, all articles in Phase 2). Reviewer pairs met to reconcile any differences in extraction and reached 100% agreement.

The Community Guide published 2 classroom PA recommendations in 2021, after we had extracted 10 qualifying articles on this topic in Phase 1. We removed these articles as being out of scope and updated criteria for Phase 2 to exclude articles addressing classroom PA (Figure 3). In reviewing articles during data extraction, we found only 1 qualifying article describing interventions to identify and/or support self-management of students with chronic health conditions that included outcomes related to PA or dietary intake. To retain a focus on PA and nutrition interventions, we excluded health services articles as out of scope (n = 12).

During data extraction, reviewers excluded additional articles that had been subsequently retracted, were too inconsistent in data presentation to allow for valid extraction, used an

inappropriate study design, or were out of scope (Phase 1, n = 51; Phase 2, n = 16). Additionally, we could not locate full-text versions of 3 qualifying articles (Phase 1).

### Gray Literature

In addition to the peer-reviewed literature, we identified a priori the School Nutrition and Meal Cost Study (SMNCS),<sup>51,52</sup> a federally commissioned, nationally representative evaluation of school meal programs following the adoption of updated nutrition standards. Reviewer pairs conducted an RoB assessment and double-extracted and reconciled extraction using the process described above. These data were integrated with peer-reviewed articles about school meals in evidence tables.

### Synthesizing Results

Our multistep process resulted in the final inclusion of 312 peer-reviewed articles from Phase 1 (n = 193) and Phase 2 (n = 119), and Volumes 2 and 4 of the SMNCS, for a total of 314 articles, describing 293 studies. We used the extracted information about intervention topics and approaches to organize articles by WSCC component. SMEs confirmed the relevance of articles to their respective manuscripts. We conducted a qualitative synthesis, grouping interventions that adopted a similar approach, and noting the directionality of results relative to the study hypothesis (expected direction [+], null [=], unexpected direction [-]). Given heterogeneity in study design, duration, outcome measures and presentation, we were unable to calculate effect size or conduct a meta-analysis. We considered the role of study design and quality in the observed outcomes.

## FINDINGS

Across the included studies, most were quasi-experimental (70%), and 30% used a randomized control or controlled clinical trial design. More studies involved urban settings (31%) than rural (10%) or suburban (6%). Half of the studies (50%) did not report location type; however, a few were designed to be nationally or state representative (2%) or reported multiple/varied location types (2%, proportions exceed 100% due to rounding). Overall, interventions were primarily designed for elementary and middle school students. The included studies reflected racially and ethnically diverse school and participant populations: 34% of studies reported a majority (>50%) white population, 22% reported that no single racial/ethnic group made up a majority, 17% reported a majority Latino/Hispanic population, 10% reported a majority black population, for 1% it varied, and 16% did not report this information. Less than one-third of studies were strong (7%) or moderate quality (24%). About half were weak/high RoB (53%), and 16% came from reviews that used an RoB assessment that did not generate an overall rating. Lack of blinding was the most frequently identified weakness.

## DISCUSSION

This collection of articles builds from a comprehensive approach to provide an overview of a decade of intervention research (2010–2020) into increasing PA and improving dietary intake among students and staff including topics ranging from policy, to technology, to



investments in school health infrastructure and corresponding with different components of WSCC.

The articles in this special issue describe the effectiveness of interventions. These articles, and a commentary that presents a research and implementation agenda, help articulate the action steps that researchers, decision makers, and others can take.

Six limitations should be noted. First, to reflect the diversity of research approaches used in school settings and prevalence of natural experiments following the adoption of policy changes (national, state, or local), we intentionally included quasi-experimental study designs, the majority of which were not blinded. As a result, we cannot rule out the possibility of social desirability bias in intervention studies that directly engaged participants without blinding or detection bias among research teams. By presenting RoB assessment results and summarizing relevant concerns within each contributing article, we are transparent about the strengths and limitations of the evidence synthesized in this special issue. Second, the searches we conducted were not completed within 2 years of the publication of this special issue. Work disruptions due to the COVID-19 pandemic limited our capacity to update searches and screen and extract new articles. Lead authors determined that the articles, including those addressing novel topics, were still relevant and that an updated search past 2020 would not substantially change the conclusions of the syntheses in this special issue. Manuscripts in this article collection include current literature as support in the Introduction and Discussion sections. Third, although the search strategies were comprehensive, we likely missed some relevant publications. Using the ML process and not including search terms or inclusion criteria for topics that had been addressed by a recent systematic review or Community Guide recommendation during Phase 2 meant that some relevant articles may have been excluded. We tested whether we were missing relevant publications in the final round of the ML process by selecting a random sample from the excluded records, wherein we predicted that there was a <1% chance of finding records matching our criteria and, consistent with our hypothesis, we found none; therefore, we did not conduct additional iterations. We decided the time savings of using this ML process and manually screening only 22% of the total articles outweighed the burden of reviewer pairs screening the remaining 6749 abstracts. Fourth, we used a sampling approach to explore whether newer studies continued to support previous syntheses and, in doing so, excluded 29 relevant articles from the contributing evidence base. We did not use this approach for articles describing novel topics. Fifth, we were unable to calculate effect size. Sixth, we did not formally test for publication bias.

## **IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY**

This special issue recognizes that school-based efforts to increase PA and nutrition among students and staff take place throughout the school day and involve more than PE teachers and school nutrition professionals. It identifies a variety of strategies across multiple components of the WSCC model that schools can consider adopting to shape school environments and support dietary and PA behaviors and health outcomes among students and staff, including engaging diverse constituents and coordinating policies, processes, and practices. We revisited core interventions to address nutrition and PA in schools, such as

school meals and PE and local wellness policies, which have been influenced over the past decade by newer standards or rules<sup>23,24,53</sup>; looked to gain insights into the intersections of WSCC components, such as interventions looking at the relationship between PE and school climate; and identified findings from the employee wellness literature that may be transferable to school settings. Researchers can look to these articles for ideas about how their work may help fill gaps in understanding or for opportunities to replicate effective interventions in settings or contexts not well represented by existing research. School leaders can find examples of strategies that show promising results and consider the relevance and feasibility of adopting a similar approach. Many of the interventions included in this special issue took place in communities experiencing poverty, and several were tailored for specific racial and ethnic populations, providing evidence of feasibility and, in some cases, effectiveness. As decision makers consider which interventions to scale, choices around where to scale and with what resources and support may have important implications for health equity.

## Conclusions

Using the methodology described in this article, 7 systematic reviews are presented in this special issue, each describing a different aspect of addressing PA and nutrition in schools; they address coordinated, whole-of-school approaches<sup>54</sup>; the relationships between PA and nutrition and the physical environment and social emotional climate<sup>55</sup>; the school nutrition environment<sup>56</sup>; PA interventions during the school day<sup>57</sup>; out-of-school time<sup>58</sup>; opportunities within health education<sup>59</sup>; and school employee wellbeing.<sup>60</sup> A scoping review looks across these articles to describe how included interventions engaged parents and community members.<sup>45</sup> Lastly, a commentary highlights how these findings together contribute to an agenda to guide research and action.<sup>61</sup>

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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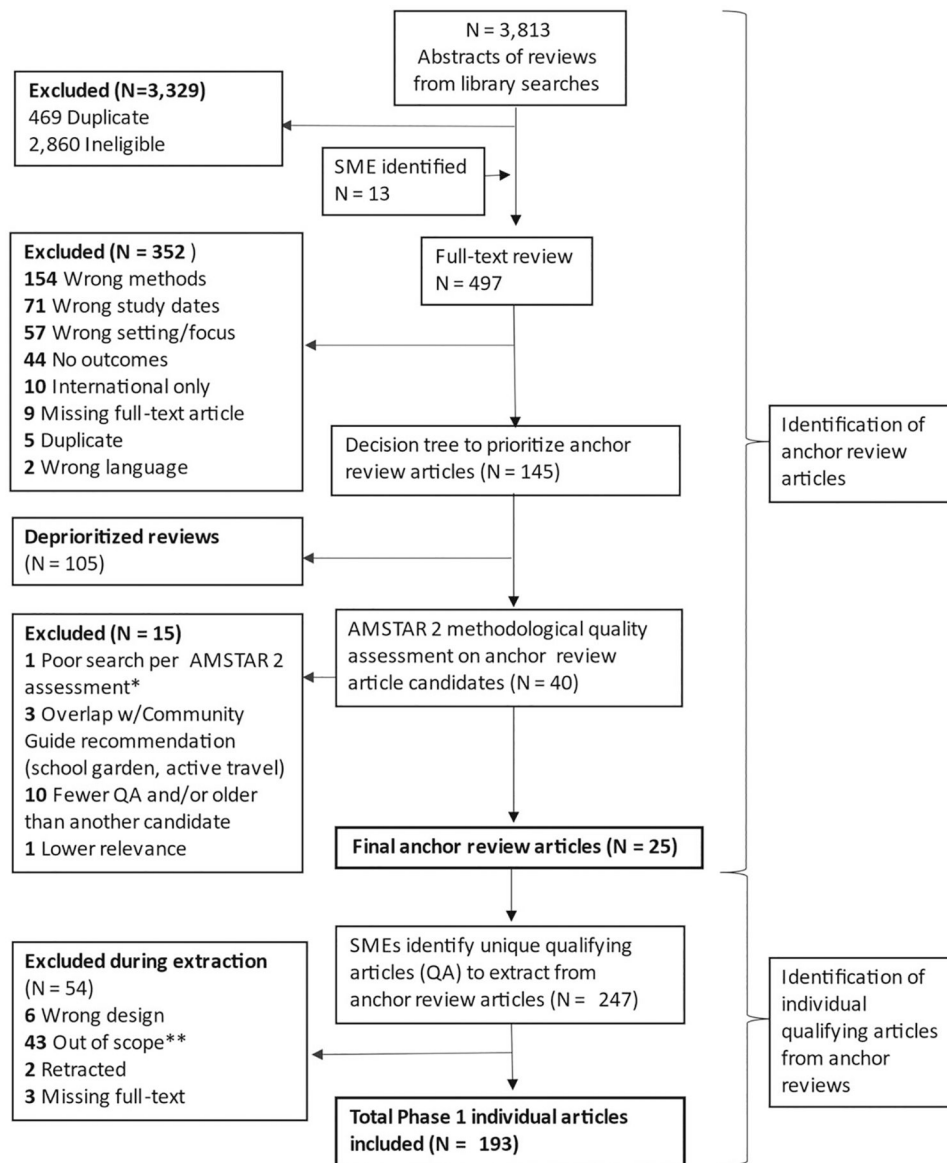
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**Figure 1.** The Whole School, Whole Community, Whole Child Model—The Center for Disease Control and Prevention’s Framework for Addressing Health in Schools

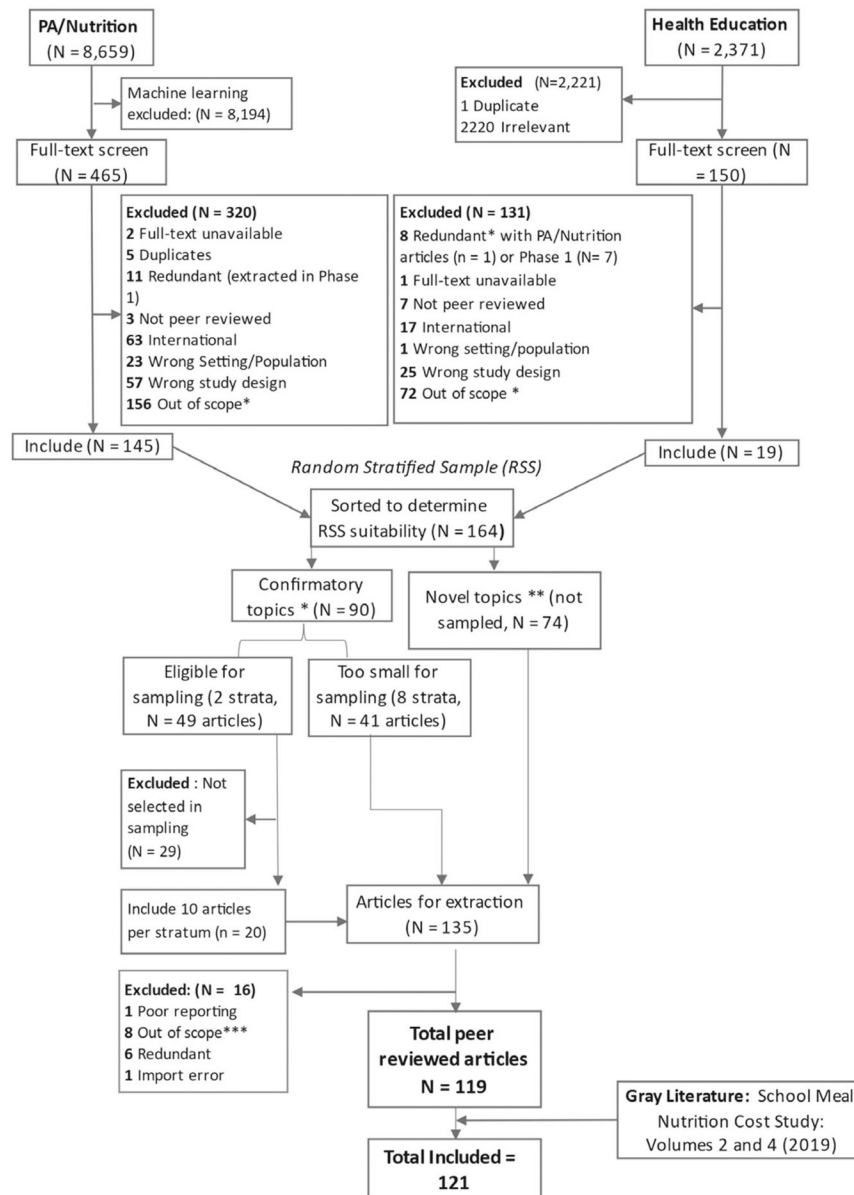


**Figure 2.**

Phase 1: Identification of individual qualifying articles to include from review

AMSTAR 2, Assessing Methodological Quality of Systematic Reviews; PA, physical activity; QA, qualifying article; SME, subject matter expert. \*Did not use a comprehensive literature search strategy per SME pairs completion of the Assessing Methodological Quality of Systematic Reviews (AMSTAR 2) critical appraisal tool. \*\*Out of scope: Wrong outcomes, process data only, wrong date, or topic. For example, classroom physical activity interventions were considered out of scope because The Community Guide released 2 classroom physical activity recommendations in 2021.





**Figure 3.** Phase 2: Identification of Individual Articles About Physical Activity, Nutrition, and Health Education Topics  
 PA, physical activity; RSS, random stratified sample. \*Confirmatory Topic: Builds or updates from Phase 1 review or existing recommendation. Example: Increasing access to drinking water in schools. \*\*Novel Topic: Addresses a topic not covered by a Phase 1 review. Example: Policy interventions in out of school time (OST). \*\*\*Out of scope: Wrong outcomes, wrong date, wrong intervention/(Phase 2 only) topic did not need to be updated. Examples: Only includes process outcomes; Classroom PA articles.

**Table 1.****Inclusion Criteria for Article Screening**


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Reviewers Excluded the Article as Soon as the Answer to a Criterion was "NO."

<b>1</b>	TITLE ONLY: Study takes place in the US or US territory (ie, exclude if title references an international location)
<b>2</b>	Abstract/article is available
<b>3</b>	Abstract/article is published in English
<b>4</b>	Abstract/article is from a peer-reviewed journal article publication
<b>5</b>	Study/intervention takes place in the United States
<b>6</b>	Abstract/article addresses the K-12 school setting or before- or afterschool (OST) programs for school-aged children or workplace wellness
<b>7</b>	Abstract/article describes a relevant school-based or out-of-school intervention
<b>8</b>	Abstract/article indicates a relevant study design
	For reviews (Phase 1): systematic review or meta-analysis
	For individual articles (Phase 1, Qualifying Articles; Phase 2, All): Randomized control and controlled clinical trials and quasi-experimental designs (ie, exclude single time point cross-sectional data and process-only evaluations)
<b>9</b>	Abstract/article addresses key content area that needs updating*
<b>10</b>	Appropriate publication date
	Phase 1: Exclude if published before 2010
	Phase 2: Exclude if published before 2010 or before search date in the review article or Community Guide determination for select topics that build from an existing review or recommendation*

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\* SMEs referenced a detailed screening rubric that specified relevant/priority topics for each phase (Phases 1 and 2) and any search date details that varied by topic (Phase 2 only).

**Table 2.**

**Decision Tree to Prioritize Selection of Anchor Review Articles in Phase 1**

Attribute	Answer Options	Notes
<b>1. Search:</b> Did the review use an acceptable search strategy? (eg, used relevant and comprehensive keywords and databases) If no, STOP.	Yes No	Given your knowledge of the topic area, are the keywords and databases sufficiently comprehensive?
<b>2. Research question (RQ) relevance:</b> How well does the review align with your priority questions? If it does not align, STOP.	Aligns with RQ Mostly or partially aligns Does not align	Subject matter experts referenced priority research questions.
<b>2b. RQ relevance notes</b>	[open]	If the review mostly/partially aligns, where is it “off”? Is something missing? Do they define terms differently?
<b>3. Outcome measures:</b> Does the study include data on 1 relevant primary outcomes related to physical activity or nutrition? If no, STOP.	Yes, ST Yes, MT Yes, ST and MT No	Primary outcomes look at the influence of an intervention (eg, a policy, program system, or environmental change) on health behaviors and health outcomes. Indicators of academic achievement or social emotional climate are of interest as secondary outcomes. Single point in time cross-sectional studies are not appropriate for generating relevant outcomes. Short-term (ST) outcome examples: <ul style="list-style-type: none"> <li>• Knowledge, attitude, beliefs</li> <li>• Skills</li> <li>• Changes to school environment</li> <li>• Policy adoption</li> </ul>
<b>3b. Outcome notes:</b> What outcomes are reported?	[open]	Medium-term (MT) outcome examples <ul style="list-style-type: none"> <li>• Student physical activity</li> <li>• Diet quality or consumption</li> <li>• Body composition</li> </ul> If the sole qualifying study used a cross-sectional design, select NO and stop reviewing. If an article only reports on secondary outcomes (eg, grades, school connectedness), select NO and stop reviewing. However, if you think this article provides useful background context, please tag as “Background/Context.”
<b>4. Quantity:</b> How many qualifying articles are included?	[open]	Include both physical activity and nutrition outcomes and secondary outcomes.  Qualifying articles are: * US-based * Published 2010-present * Presenting data on effectiveness of a K-12 school-based or OST intervention related to physical activity, nutrition, managing chronic conditions, OR employee wellness interventions focusing on physical activity, nutrition, chronic disease prevention, or tobacco control/cessation For example, if the review includes elementary school recess interventions from the United States, United Kingdom and Canada, the qualifying studies would be those that took place in the United States and were published 2010-present.

Attribute	Answer Options	Notes
<p><b>5. Sufficient detail:</b> Are qualifying articles identified and summarized in adequate detail?</p>	<p>Yes No</p>	<p>For YES, articles must meet both: (1) Article includes qualifying articles that are * US-based * Published 2010-present * Present data on effectiveness of a K-12 school-based intervention related to our topic areas (see above) AND (2) Details for all qualifying studies are provided in a table, detailed narrative, summary listing</p>
<p><b>6. Recency:</b> When was the most recent qualifying article published?</p>	[open]	<p>Recency of the evidence base is an important consideration; this information can be used to determine the scope of any necessary updates to an anchor review article.</p>
<p><b>7. Evidence considerations:</b> How do authors address differences across studies in their presentation/discussion of the evidence?</p>	[open]	<p>This question is interested in how authors address heterogeneity in study design and/or implementation when considering results across interventions. For example, do they report findings separately by study design? By implementation characteristics (eg, &lt;3 months, &gt;3 months)? By outcome measure?</p>
<p><b>8. Generalizability:</b> To which populations is this research generalizable? Any important gaps?</p>	[open]	<p>Does the article provide enough information for you to assess the generalizability of the evidence presented? Make any notes re: generalizability of the findings. Aspects to consider could include age groups, ethnicity, rural/urban/suburban, free-reduced price lunch eligibility/school socioeconomic status.</p>