Physical activity strategies in low-resource elementary schools: Why and how are they prioritized?

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ABSTRACT

Most US children do not achieve the recommended daily 60 minutes of moderate to vigorous physical activity (PA). Schools are ideal settings to promote PA given their reach to large child populations, including students with less resources and limited access to PA opportunities. Although limited in numbers, schools that offer enough PA strategies can provide insights to increase PA in these settings. However, few studies have examined why and how these schools successfully prioritize PA strategies, particularly schools serving socioeconomically disadvantaged student populations. This qualitative study of low-resource, PA-supportive schools was conducted during 2017–2018 to obtain in-depth information about why and how schools make decisions to prioritize and implement PA strategies. Forty-two study participants in 17 states plus Washington DC were recruited. Content analysis revealed the following themes: (1) Schools prioritize PA because it helps advance learning and health goals; (2) Policies and standards for PA/PE reinforce the importance of PA; (3) A culture of learning and health advances decisions to offer PA; (4) Advocates play a key role in generating support to integrate PA; (5) Stakeholder buy-in enables decisions to offer PA opportunities; (6) Collaboration focused on PA specifically can facilitate decisions to increase PA strategies; and (7) Funding and resources drive decisions to put PA strategies into practice. The study findings offer insights that may be useful in efforts to increase access to PA opportunities in low-resource elementary schools.

1. Introduction

The majority of US children do not obtain the recommended 60 minutes of daily moderate-to-vigorous physical activity (MVPA); physical inactivity puts children at risk for obesity and related chronic diseases (National Physical Activity Plan Alliance, 2018; Physical Activity Guidelines Advisory Committee, 2018; U.S. Department of Health and Human Services, 2018). Children from socioeconomically (SES) disadvantaged backgrounds are often less likely to participate in physical activity (PA) relative to their SES advantaged peers (Frederick et al., 2014; Singh et al., 2008). Although this pattern has not always been consistent (Centers for Disease Control Prevention, 2003; Fakhouri et al., 2013; Institute of Medicine, 2013; Whitt-Glover et al., 2009), SES disparities in access to PA opportunities are often less likely to participate in physical activity (PA) relative to their SES advantaged peers (Frederick et al., 2014; Singh et al., 2008). Although this pattern has not always been consistent (Centers for Disease Control Prevention, 2003; Fakhouri et al., 2013; Institute of Medicine, 2013; Whitt-Glover et al., 2009), SES disparities in access to PA opportunities are often less likely to participate in physical activity (PA) relative to their SES advantaged peers (Frederick et al., 2014; Singh et al., 2008). Although this pattern has not always been consistent (Centers for Disease Control Prevention, 2003; Fakhouri et al., 2013; Institute of Medicine, 2013; Whitt-Glover et al., 2009), Low-SES schools are less likely than high-SES schools to provide after school sports programming (Carlson et al., 2014; Peralta et al., 2019) and are less likely to have access to PA equipment and facilities (Peralta et al., 2019; Van Dyke et al., 2018).

Schools can play a central role in promoting PA. They have a broad population reach and can help equalize access to PA opportunities across students of different SES backgrounds (Institute of Medicine, 2013). Multiple studies have observed that school-based PA interventions and other strategies such as PE, mandatory classroom breaks, and active transport, were associated with increased minutes of MVPA (Bassett et al., 2013), improved health and educational outcomes (Centers for Disease Control and Prevention, 2013; Dobbins et al., 2013; Institute of Medicine, 2013; Kriemler et al., 2011; Lai et al., 2014; Physical Activity Guidelines Advisory Committee, 2018; Salmon et al., 2007; van Stuijs et al., 2007). Consequently, several authoritative entities have called on schools to provide students at least thirty of the sixty daily recommended minutes of PA, using a whole school approach and a variety of PA strategies (Centers for Disease Control and Prevention, 2013;
The study was exempted from review by the Institutional Review Board.

Through an iterative process the research team developed initial questions that were sent out for content-review by researchers in the field. The qualitative study explored why and how exemplary low-resource schools make decisions to prioritize and implement PA strategies.

2. Methods

2.1. Study participants

Using convenience and snowball sampling methods, participants were recruited from December 2017 through May 2018. Recruitment focused on schools that (a) provide multiple PA opportunities as recommended by the Comprehensive School PA Program; (b) primarily served low-SES students (≥50% eligible for free or reduced price meals (FRPM)); and (c) served elementary/middle grade levels. Schools were identified and selected as follows: (1) potential candidate schools were located through website searches, referrals from networks and professional contacts (e.g., Alliance for A Healthier Generation, Active Schools); (2) an initial list of schools known for providing multiple PA strategies was compiled; (3) these schools were classified according to SES criteria (≥50% students eligible for FRPM) using available public information (e.g., the school’s website, National Education Statistics); (4) the list was updated as new schools were identified. Focusing on low-resource schools on the list, schools were contacted to explain the study including the criteria for participation, and to invite schools to participate as well as identify staff responsible for making decisions about PA.

2.2. Instruments

An online survey and a questionnaire were developed for this study. The online survey was designed to obtain self-reported school demographic information, identify participant availability and elicit initial responses that might be used as prompts to gather more in-depth information during the telephone interviews. The questionnaire was designed to gather information via telephone interviews about why and how schools make decisions to prioritize and implement PA strategies. Through an iterative process the research team developed initial questions that were sent out for content-review by researchers in the field. The questionnaire was additionally reviewed by an elementary classroom teacher (also required to teach PE), in consultation with peers to provide feedback on clarity, length and additional missing content. The questionnaire was finalized after several iterations. Prior to the interviews, three interviewers received training about logistics, informed consent, and fidelity to the questionnaire.

2.3. Procedure

After agreeing to participate in the study, a link to the survey was sent to participants along with multiple reminders. Following completion of the online survey, a telephone interview was scheduled. Informed consent was obtained prior to data collection. The telephone interviews were recorded and transcribed verbatim. Responses were aggregated and anonymized to protect study participant confidentiality. Participants received an electronic gift card after completion of data collection. The study was exempted from review by the Institutional Review Board.

Less research has focused on low-resource schools specifically (van Sluijs et al., 2007). Addressing this gap is important given the need to increase equity in school access to PA opportunities (Botchwey et al., 2018; Institute of Medicine, 2013). Additionally, evidence to inform the design of interventions tailored to disparities populations is especially scarce (Botchwey et al., 2018; Sallis et al., 2019). Although low-resource schools are often more likely to face barriers to PA implementation (Carlson et al., 2014; Peralta et al., 2019; Van Dyke et al., 2018), studies focused on low-resource schools that offer multiple PA strategies may shed light on approaches to increase opportunities in schools.

Table 1 Characteristics of Study Participant Schools (n = 41).

| Region* | N | Percent |
|---------|---|---------|
| Northeast | 4 | 9.8% |
| Midwest | 10 | 24.4% |
| South | 16 | 39% |
| West | 11 | 26.8% |
| Urbanicity | | |
| Urban | 20 | 48.8% |
| Rural | 10 | 24.4% |
| Suburban | 11 | 26.8% |
| Racial/ethnic majority of the student enrollment | | |
| White | 15 | 36.6% |
| Latino | 14 | 34.1% |
| African American | 1 | 2.4% |
| Asian/Pacific Islander | 2 | 4.9% |
| No Majority | 9 | 22.0% |
| Student eligibility for free or reduce price meals | | |
| More than 50% of students eligible for free and reduced lunch | 30 | 73.2% |

*All indicators except for region are based on NCES 2017–18 Common Core of Data. Data. https://nces.ed.gov/ccd/ccddata.asp

*School regions classified according to 2010 Census Bureau Regions. https://www.census.gov/geographies/reference-maps.html

...of San Francisco State University.

2.4. Data analysis

The school demographic data from the online survey was tabulated and compared with National Center for Education Statistics (NCES) data. To analyze the telephone interview data, a multi-stage analytic process was used, combining deductive, inductive and verification techniques to strengthen reliability and validity (Denzin and Lincoln, 2003). An initial codebook was created using data from the first ten transcripts to generate preliminary codes that described emerging patterns. Weekly meetings were held to refine codes, conduct a comparative analysis with remaining transcripts, and resolve any inconsistencies. In the deductive process, codes were developed based on primary research questions. All transcriptions were coded using Nvivo 12 (QSR International). To ensure consistent application of codes, two research assistants independently coded all transcripts using the final codebook with an overall percentage agreement of 91%. The coded transcriptions were then analyzed to identify larger emergent themes. In the verification stage, all transcripts were reviewed by the authors to confirm accuracy of reported themes. We report findings from the telephone interview data. Direct quotes are used to support thematic evidence.

3. Results

A total of 42 participants from 17 states plus Washington DC completed the online survey and a telephone interview. The self-reported school demographic characteristics were similar to the NCES 2017–2018 data, thus the latter are reported (U.S. Department of Education, 2017-2018). The vast majority of the participants (85.4%) were from elementary schools (Table 1). Participants included principals, PE teachers, classroom teachers and wellness coordinators. Seventy-three percent of the schools served a high proportion (more than 50%) of students eligible for FRPM. Of the total number of schools, 48.8% were located in urban areas, 26.8% in suburban areas and 24.4% in rural areas. Thirty-four percent of the schools had majority Latino student enrollment, 36.6% White, 2.4% African American, 4.9% Asian/Pacific Islander, and 22% had no racial/ethnic student majority.

Based on telephone interview data, seven themes emerged...
3.2. Policies and standards for PA/PE reinforce the importance of PA

Many respondents mentioned policies and standards help facilitate making PA a priority. Participants shared that standards to recommend or require specific daily or weekly minutes of PA and policies governing PE help guide planning and implementation of PA strategies, and promote accountability. For some schools, policy helps legitimize a growing active school environment, whereas for others being accountable to PA policies was the reason for the increase, as one respondent noted:

“When I got started on this (wellness team), we had a principal that was a member and he told us...when anything is in policy, you better be following it. He said if it’s not in policy, you’re going to have trouble getting people to do those things. Suggestions are not going to be followed, but (with) policy you’re going to get in trouble for not doing what you’re supposed to be doing.”

3.3. A culture of learning and health advances decisions to offer PA

Multiple respondents remarked about a culture, a mindset in their schools which considers PA as integral to learning and health. They mentioned this culture is created, in part, by promoting the value of PA across stakeholders. The process of raising awareness about the importance of PA can shift the mindset among stakeholders from considering PA as competing against the academic agenda to seeing PA as an integral part of education. Schools that display a culture of learning and health enable decision-makers to focus on PA alongside other core curricular areas as illustrated by the quote below:

“The classroom teachers have gotten really good at incorporating (PA) into their instruction. Like math teachers have found ways to teach math through movement so they don’t lose any instruction time and keep up with the standards they have to meet academically. So that physical activity is not actually taking away from academic efforts, but rather enhancing them by using physical activity.”

This culture sets up the school social environment in a way that ensures PA strategies are carried out. This includes allocating time and space, providing technical assistance, equipment and supplies as well as personnel dedicated to carrying out the PA strategies. In addition, policies and standards for PA/PE contribute to fostering a culture of learning and health. All these elements often combine to build a culture in schools that is associated with physically active students who are engaged and better able to learn. One respondent put it this way:

“It’s all about building a culture in your school. That it’s not just the PE teacher’s job to keep the students active; it’s everybody’s job and...it benefits everybody...it’s a really big piece.”

3.4. Advocates play a key role in generating PA support

Advocates for PA within schools is key to generating support among stakeholders. Many respondents mentioned PA advocates who are persistent, committed and passionate play a central role in their school’s ability to focus on and execute PA programs, as illustrated below:

“The bottom line is that you have to have PE teachers or somebody in the school that is going to promote (PA). Whether it is a parent or principal or staff member, it has to come from the passion of the people that work there.”

PE teachers, school district PA/PE administrators, classroom teachers, and principals were most often cited as influential advocates of PA. PA advocates provide leadership and resources, share knowledge about PA research, policies and standards, and demonstrate the positive influences of PA on students. Some advocates provide technical assistance to classroom teachers and school administrators as they adopt and integrate PA strategies in the school environment.

3.5. Buy-in from stakeholders enables decisions to increase PA

Respondents noted a blend of compelling research, advocacy, and education are required to convince stakeholders to embrace the importance of PA. Many respondents referred to the acceptance and belief in the benefits of PA as acquiring “buy-in.” Although buy-in toward PA often occurs at many levels, it is critically important that teachers and principals value and embrace PA, because ultimately they are responsible for executing the PA strategies. Indeed, respondents mentioned direct observations of the positive effects of PA on students as an especially powerful motivator for stakeholders, echoed by one participant:

“We have an administration right now that has great buy-in, and they are seeing. It’s not just that they’re buying in because we are saying this needs to be a priority, but because we have initiated some of...
these programs in advance, they are seeing the great benefits that are coming from it.

Additionally, buy-in that leads to action is more likely to occur when strategies are easy to execute, fun for the students and can be incorporated effectively with academic learning as suggested by this quote:

One thing I got online was about how physical activity helps the brain. It shows a display of the brain and the benefits of physical activity on the brain, and I have shared that with the teachers at our meetings... and that was one thing I did. Like I said, I got some buy-in from teachers to do brain breaks in between their lessons, and to increase the recess minutes.

Moreover, some participants mentioned when stakeholders (e.g., administrators, teachers, and parents) buy into PA strategies, they often themselves become advocates for PA.

3.6. Collaboration facilitate decisions to enhance PA

Many participants indicated collaborations enhance their school decisions to adopt and carry out PA strategies. Respondents mentioned collaborative relationships strengthen connections, expand resources, and secure technical support toward PA strategies. Collaborations, such as wellness committees, community partnerships and professional development opportunities stimulate innovation, increase the capacity of schools to generate buy-in and contribute to a culture of learning and health that promotes PA. One participant highlights the benefits of collaboration:

We get to meet with teachers... help them and work with (them) statewide, and so I try to listen when people have successful lessons or units. Then I’ll try to adapt them to meet the students that I have, and just that collaboration with other teachers has been very helpful.

3.7. Funding and resources drive decisions to put PA into practice

The vast majority of respondents noted cost is a moderately or very important factor in school decisions to select and implement PA strategies. The limited availability of funds (e.g., to cover staffing and expenses for equipment/supplies) was frequently mentioned as an obstacle that restricts the types of PA strategies schools can carry out. Several participants reported they go out of their way to secure grant funding, as illustrated by one respondent:

I was able to take two, two and a half hours off my day to... work on things like this (grants). That’s what started pushing... we were writing for another grant... and (a) lot of the things we have done over the last five years are sustainable but without funds, things are hard to sustain.

While very important, funding is not the only factor that drives decisions to make PA happen at the schools. Participants shared they also need and utilize a variety of other resources including information, best practices and technical assistance to augment their ability to put PA strategies into action. They access these resources through an array of avenues, including collaborations with local and national organizations (e.g., SHAPE America, Alliance for a Healthier Generation, Active Schools, SPARK, and AHPERD), local and national conferences, and targeted internet searches (e.g., online videos, forums, and resources focused on PA).

4. Discussion

This qualitative study found that schools prioritize PA opportunities because PA helps to advance learning and health goals, a theme intrinsically related to how schools make decisions to prioritize and implement PA strategies. Specifically, schools capitalize on the existence of state or district-level PA/PE policies to justify, advocate and prioritize PA; develop and promote a culture of learning and health; and engage in advocacy to gain stakeholder buy-in toward the value of PA; and identify funding, resources and collaborations to integrate and sustain PA strategies. By focusing specifically on low-resource schools that offer multiple PA opportunities, this qualitative study provides in-depth knowledge from front-line staff about schools’ decisions to prioritize PA strategies. Novel aspects of the study include insights about specific ways low-resource schools, despite known barriers, make decisions to elevate PA as a priority.

The finding that existing policies governing PA/PE can help to justify the need for PA strategies in study schools is of importance, because it suggests available policies could motivate some schools and/or their stakeholders to advocate for and enact PA strategies. Previous research has associated policies governing PA/PE with more PA practices in schools, greater likelihood of recess and PE, additional days of PA per week (Calvert et al., 2020; Institute of Medicine, 2013; Slater et al., 2012; Taber et al., 2013), higher likelihood of fitness (Sanchez-Vaznaugh et al., 2012), and increased children’s PA (Ganzar et al., 2019).

This study also revealed a culture of learning and health enhanced decisions to carry out PA strategies. This finding, similar to prior research (Economos et al., 2018; Morton et al., 2016), implies that a culture of learning and health may be essential in supporting programs and policies related to PA in low-resource schools. The CDC’s Whole School, Whole Community, Whole Child model includes PA as a key component of a child’s learning and health (Centers for Disease Control Prevention, 2014). This model could help promote a culture that fully integrates and values PA in school. Our study findings suggest building this culture in low-resource school communities may require additional efforts, including advocacy, stakeholder buy-in and collaboration focused on PA.

Stakeholder buy-in toward the value of PA was essential in PA progammatic decision-making. Stakeholder experiences observing the impact of PA on students, and identifying straightforward PA strategies that were easy to implement and fun for students influenced decisions to offer PA opportunities. Additionally, given that some schools noted stakeholder reluctance to accept and/or embrace the value PA to student learning or viewed PA as competing with academic goals, advocacy played an important role in gaining buy-in toward PA-related strategies in some schools. Advocacy also helped promote a culture of learning and health, a finding similar to previous research (Wenner et al., 2019).

This study adds knowledge about low-resource school decisions to implement PA strategies in light of funding scarcity. Those decisions focused on identifying PA strategies that were easy to implement and could be seamlessly integrated into the school day, and on actively seeking PA-related grants as well as publically available PA resources (e.g., low-cost strategies). Previous research has noted interventions focusing on resources and collaboration, such as training and staffing of PE teachers (Turner et al., 2014) and access to resources (i.e., small grants) (Miller et al., 2018) have been associated with increased PA in schools. Efforts to increase PA opportunities in low-resource communities should include promoting and expanding access to free and other low-cost resources.

The findings underscore the need for structural support for PA implementation in low-resource schools. While governmental policies are critical to increasing PA in schools, limited funding remains an ongoing challenge. Strengthening policies (Carlson et al., 2013) to allocate funding for implementation and technical assistance and to include provisions for evaluation (Sallis et al., 2012) and monitoring for compliance is likely to help sustain PA strategies. Furthermore, creating a school and school-district culture, in which PA is integral to learning and health can foster a PA-supportive environment that ensures PA is a part of children’s everyday experience.

Future research is needed to improve our understanding of how PA
“I want kids to be successful in their whole life, in every aspect of their learning. I want them to be successful physically when they are in the gym. I want them to be successful in their classrooms. I want them to be successful socially and emotionally with one another, and to be able to have healthy relationships. And physical activity is one of those things that can catch all of that. And so, I guess for me, I just want to help kids be their very best.”

“Learning doesn’t happen, like we used to learn where we are all sitting at the desk, everyone quiet, everyone facing the same way, doing the exact same things. I have to tell this story; there is a first grader, the first day she got an exercise ball, she was sitting on the ball, got her math paper in front of her and she’s lightly bouncing, because light bounces are okay and she’s working on this paper and her teacher is filing her. She said she had to film this because she would never finish a math paper without a lot of nagging, prodding, and pushing to get it done. She did the entire paper by herself bouncing contentedly away.”

 Policies and standards for PA/PE reinforce the importance of physical activity

“This has made it a priority and our state has made it a priority. A state policy says all elementary and middle schools have to provide thirty minutes of moderate to vigorous physical activity daily, beyond PE.”

“I mean that (the state policy for weekly PE minutes) definitely influenced because this is the first year that fifth and sixth graders get forty-five minutes (of PE).”

“That’s a really big program, of course, falls right in line with PE).”

“I go to conferences. Yes, absolutely I steal from other people, and I do so gleefully because they can steal from me … (A) better word is collaboration and working with like-minded peers … the whole goal is to have better, healthier, more well-educated children about physical education, health and wellness … and if someone else is doing something, that’s great. Yes, by all means and I’m going to take a look at that and I’m going to see if it’s going to work at our campus.”

“I was working with the music teacher and we just finished up a hip-hop dance unit; the kids, as part of their brain break were doing the dance all together. It’s definitely something that (the principal) tries to encourage me to do, in terms of collaborating with other teachers to help them.”

Funding and resources shape decisions to put physical activity strategies in practice

“So, I’ve been able to, on my own, and not part of my job description … I got a grant and that is actually how we got the funding for a new playground.”

“The school’s county-wide budget obviously is (the source of our) bigger purchases … And if they don’t budget (it), we can’t get it. Our (parent teacher organization) does stuff here and there but not a lot … the main source for our bigger stuff comes from grants.”

“I am involved as a teacher leader for (organization name redacted), which is … a state funded project that is based on working with universities and getting the latest and greatest on research and information related to PA and health and physical education. I work with that, so I bring that information back. I attend as many conferences as I can … I am a part of … organizations so I am able to take info from there, and then I use articles and things, that are either handed to me through my professional organizations or I’ve looked up before.”

“I got grants and bought equipment for (teachers) to use in the classrooms and I got … exercise balls for the kids to sit on and … in the old days before I figured out how to email people stuff, I would print off ideas of things that I would see online or the things that would get sent to me.”

Table A1 (continued)

Schools prioritize physical activity because it helps advance learning and health

-we really went with our wellness committee. We made sure we had school board members on there; we made sure our assistant superintendent and all our building principals were a part of that committee, so that they are hearing firsthand what we would like to do … getting their initial thoughts and why they think it would or wouldn’t work, and then getting their buy-in from the top down.”

Collaboration can facilitate decisions to enhance physical activity strategies

“We have actually gone to a (PA) summer institute which is held in our school. We are pretty pumped about that, … and it’s just amazing. Your brain just explodes with all that information. And then we were able to then share it with our school, and that’s been a terrific adventure. We’re looking to get a movement lab put in for the whole school.”

“… we really went with our wellness committee. We made sure we had school board members on there; we made sure our assistant superintendent and all our building principals were a part of that committee, so that they are hearing firsthand what we would like to do … getting their initial thoughts and why they think it would or wouldn’t work, and then getting their buy-in from the top down.”

Conclusions

This qualitative study of 42 participants in low-resource settings found that schools prioritize PA to advance learning and health goals. Existing policies governing PA/PE, a school learning and health culture, advocacy, buy-in and resource-use creativity enhance decisions to prioritize and implement PA strategies. These findings provide insights that can be prioritized, optimized and implemented in low-resource schools. Quantitative research could help identify feasible PA strategies that may confer the greatest impact on children’s health and learning. Mixed-methods research should identify PA activities that are age/culturally/ geographically relevant to population groups with varying socioeconomic disadvantages. Future research is warranted to improve our knowledge of how, when and what is necessary to strengthen and promote the value and impact of PA within and across schools, particularly among those serving low-income and children of color.

This study has several limitations, including the convenience nature of the sample, the small number of majority African American schools and the data are self-reported. Therefore, the findings and conclusions are suggestive, and are not suitable for generating statistical conclusions. Additionally, we could not independently or directly verify whether or not study participant schools fully implemented the array of self-reported PA strategies. Nevertheless, this study provides in-depth information about how low-resource schools that self-reported implementation of a variety of PA strategies, decide to prioritize and carry out PA strategies.

5. Conclusions

This qualitative study of 42 participants in low-resource settings found that schools prioritize PA to advance learning and health goals. Existing policies governing PA/PE, a school learning and health culture, advocacy, buy-in and resource-use creativity enhance decisions to prioritize and implement PA strategies. These findings provide insights that...
may help future efforts to increase PA opportunities in low-resource elementary schools.

CRediT authorship contribution statement

Maria Elena Acosta: Investigation, Formal analysis, Software, Validation, Mika Matsuzakib, Methodology, Writing - review & editing.
Sandra J. Slater: Methodology, Writing - review & editing.
Emma V. Sanchez-Vaznaugh: Conceptualization, Investigation, Methodology, Data curation, Formal analysis, Project administration, Supervision, Validation, Visualization, Funding acquisition, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix

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