Reconsidering Maslow: The Role of the School Health Policy in a Holistic Approach to Child Health and Wellness

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Abstract

Schools in the United States have made use of Maslow's Hierarchy of Needs (Maslow, 1943, 1954) since the 1940s as a way to understand everything from student motivation to school buildings. Little attention is given, however, to the degree to which teachers have a role in meeting students' basic needs, particularly at the foundational levels of the hierarchy. While teachers are understood to be core to student success, in the United States they are typically poorly prepared to address students' basic physiological and safety needs. This paper examines analysis of a policy that was implemented at the school level in order to highlight the critical role that teachers must play in creating healthy school environments and will act as a call to increase the focus of research on teachers' roles in providing integrated and comprehensive health education in schools to lead to long-term benefits.

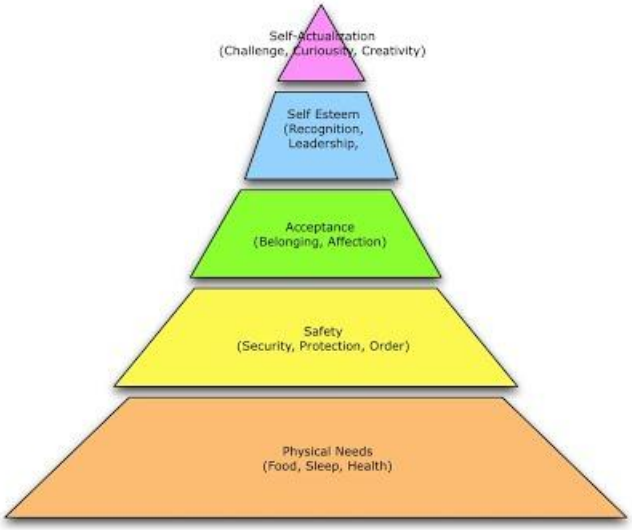
Keywords: Health, Student Needs, Academic Achievement, Whole Child, Whole School, Whole Community,

1.Introduction and Background

In his TedXTalk, *Growing Roses in Concrete*, Jeff Duncan-Andrade identifies what U.S. schools are not doing for their students. He references Maslow's hierarchy of needs and how many students in an urban context cannot get past the first two foundational levels, which include food, water, sleep, and safety. Duncan-Andrade goes on to suggest that every school must provide these to students before they can make it to the pinnacle of the pyramid, self-actualization (2013). With schools at the center of communities, coordinated services by the school and other outside agencies should work together to ensure that student basic needs are met so they are prepared to learn. While academics are important, particularly for vulnerable populations, we should keep in mind the quote attributed to Frederick Douglass "It is easier to build strong children than to repair broken men" (hooks, 2004). This paper will focus on the relationship between health (one of Maslow's basic needs) and academics. Students' health and academic achievement are two areas of ongoing attention and concern - for good reason. Healthier students have higher levels of educational achievement (Behrman, 1996; Ross & Wu, 1995) and are more likely to become capable and engaged members of society (Akom, Shah & Nakai, 2016; Sen, 2011). And, while teachers are clearlya factor in academic development, findings suggest they could play a stronger role in students' health (e.g. Casser, 2017; Ozer, 2007; Weaver-Hightower, 2011). Attention to the whole child, and work to encourage adoption of models in the US that support a holistic approach to schooling that includes health, such as the "Whole School, Whole Community, Whole Child" frame work (Lewallen, Hunt, Potts-Datema, Zaza & Giles, 2015)have yet to find the success in schools in the US, but have been successful in England (Patalay, Gondek, Moltrecht, Giese, Curtin, Stanković, &Savka, 2017).

Maslow's hierarchy presents a model for considering student behavior and motivation and asserts that students' needs must be met before the child can be available and equipped for instruction. Presented typically as a pyramid, it presents a set of layers of individual human needs, with the foundation as physiological, then safety, then belongingness, then esteem, and finally self-actualization (see Figure 1).

Figure 1: Maslow's Hierarchy of Needs



Maslow's theory is considered a Deficiency/Growth needs theory – meaning that the student who is deficient in any need will not be able to focus on other issues until those needs are met. The relevance of Maslow's hierarchy today is as compelling as it was when first introduced. Maslow (1968) asserted that if teachers found time to focus on children's needs, it would lead teachers to

"value them as great moments in the learning process, moments in which both cognitive and personal growth take place simultaneously, then this valuing can be transmitted to the child. He in turn is then taught to value rather than to suppress his greatest moments of illumination, moments which can validate and make worthwhile the more usual trudging and slogging and "working through" of education" (p. 694).

In general, Maslow's hierarchical approach to understanding the needs of students suggests that students would be motivated to explore areas of creativity and engage in intellectually challenging work when they feel safe and their basic physiological needs are met. As such, teachers must not only ensure that students have access to services to support their health and well-being, but often must provide those supports directly in the classroom (Noltemeyer, Bush, Patton, & Bergen, 2012). While many teachers keep snacks for their students and regularly engage in movement breaks, there needs to be a more systematic, data-based approach to meeting these basic needs.

2. The role of health in learning

The research that supports the benefits of quality nutrition and physical activity on student learning is convincing. Benton (2008) provides a meta-analysis of the research available on diet and cognition in children. The author reports on research which suggests macro (protein) and micronutrient (like zinc and iron) depletion is associated with behavior problems and hyperactivity. Consuming nutrient-dense food instead of high-calorie, low nutrient food has been linked with positive academic results, while increased consumption of high calorie, low nutrient food has been linked with negative academic and behavioral results. (Burrows Goldman, Pursey, & Lim, 2017; Chan, Knight, & Nicholson, 2017; Fu, Cheng, Tu, & Pan, 2007;Purtell & Gershoff, 2015). A "Western diet" (high calorie, low nutrient-dense food) has been statistically linked to an increased risk of ADHD diagnosis (Howard, Robinson, Smith, Ambrosini, Piek, &Oddy,2011). Weaver-Hightower (2011) points out that greater attention to how food environments shape students' educational experiences are needed (p. 18). Scientific study links obesity and poor diet to cognitive decline, not only for seniors, but across the lifespan. For example, Hillman, Pontifex, Castelli, Khan, Raine, Scudder, ... & Kamijo (2014)found that for children 7-9 years old, BMI and body adiposity were negatively related to performance on a test of academic achievement, suggesting that high BMI and adiposity were most strongly associated with reduced ability to complete tasks (p. 1069).

In another study, Cserjesi, Moinar, Luminet and Lenardo (2007) found that when they compared obese and lean 12-year-old boys, obesity was associated with reduced attention endurance and increased perseverative errors in a test of set-shifting abilities, the Wisconsin Card Sorting Task. Similar results were reported by Verdejo-Garcia, Perez-Exposito, Schmidt-Rio-Valle, Fernandez-Serrano et al(2010),who found that obese adolescents aged 13-16 years performed worse than normal weight adolescents in the same age range on indexes of inhibition, cognitive flexibility, and decision-making. Based on the results of these and other studies, it appears that, even at relatively young ages, excessive body weight is associated with deficits in some types of cognitive capacities.

Research also supports the positive relationship between children's physical health and academic performance (eg, Burkhalter & Hillman, 2011; Tomporowski, Davis, Miller, &Naglieri, 2008). A review of over 850 journal articles exploring the link between academic performance and physical activity lead Strong, Malina, Blimkie, Daniels, and Rowland (2005) to conclude that additional physical education in school curricula results in positive gains in academic performance, as well as physical fitness level, concentration, memory, classroom behavior, and intellectual performance (p. 737). Just 45 minutes of daily physical education appeared to increase cognitive ability in elementary and middle school students in the U.S. (Reed, Maslow, Long, & Hughey, 2013).Also, research indicates that physical activity helps children develop social skills, improve mental health, and reduce risk-taking behaviors (Taras, 2005), and that classroom teachers' role in promoting physical activity is key (Davidson, 2007).

Student achievement and healthful behaviors are closely linked. Janak, Gabriel, Oluyomi, Perez, Kohl &Kelder (2014) found that a healthy body mass index and a high fitness status are associated with higher academic achievement. Further, in an analysis of the National Longitudinal Study on Adolescent Health, Sieving, McRee, McMorris, Shlafer, & Resnick (2017) found that students who felt connected to school and supported by families were less likely to participate in health-risk behaviors, such as substance abuse and sexual activity (p. 277). Researchers have found that attention to students' health and well-being and involvement in school have a positive effect on self-esteem and perceptions of the future (Vohs & Baumeister, 2016).

3.The role of the school in supporting and promoting student health

In the United States, schools are not always expected to take an active role in helping to meet students' foundational needs beyond provision of services, such as providing access to health food or ensuring student's safety. The responsibility of schools to teach students explicitly about the aspects of health, namely school food and physical activity programs, are typically seen as outside the realm of the U.S. classroom teacher's purview. Meeting children's nutritional requirements is seen as the role of the school-lunch program or the family. In the U.S., physical education courses are often considered "special subjects" and regularly cancelled if other priorities arise (Marshall, & Hardman, 2000) Another challenge is the disciplinary distinction that exists between health education and the rest of education research.

Specific examination of research supporting the role of policies related to improved student nutrition and physical activity provides the framework for a comprehensive focus on child development and well-being. However, Maslow's hierarchy suggests that water, food, and sleep are basic requirements for survival. The hierarchy also suggests that deficits in meeting these foundational needs can distract the student and dominate behavior.

School leaders and teachers can encourage healthy behaviors through modeling, and through direct instruction, leading to improved student health and thereby long-term social and economic outcomes (Neumark-Sztainer., Story, & Harris, 1999; Snelling, Ernst & Irvine-Belson, 2013; Sutherland, Gill, & Binns, 2004). In the U.S., strong evidence supports the profound influence of teacher attitudes and self-efficacy toward many aspects of their work (e.g. Goddard, Hoy, & Hoy, 2000; Putney &Broughton, 2011). The continual contact that teachers, administrators, and staff maintain with students in P20 education creates a sustained opportunity to provide education and support for positive, healthy choices in creative ways. Professional development activities in health, particularly when related to traditional classroom topics and state standards, have been shown to increase teachers' self-efficacy in the area of nutrition and health by expanding their knowledge base (Snelling, Ernst & Irvine-Belson, 2013).School have a critical role to play in engaging students during the adolescent years and when working with poor, minority youth. Ruglis and Freudenberg (2010) suggest that segmentation between educational and health systems in the United States results in a lack of attention to health; they call for increased focus on the reciprocal relationships between health and school achievement (p. 1565). Research suggests that teachers who are involved with and supportive of students play a critical role in student motivation and engagement in learning (Tucker, Zayco, Herman, Reinke, & 2002).

4. Methods

4.1. Data

In May 2010, the City Council for the District of Columbia (DC)passed the Healthy Schools Act (HSA). This legislation was enacted to compel the DC Public Schools (DCPS) and Public Charter Schools to undertake a number of initiatives to advance the health of children in the city, including improving school nutrition, expanding physical and health education, increasing student physical activity time, and monitoring the implementation of these provisions through an annual school health profile. The HSA represents a major commitment to addressing the obesity epidemic in a large and socio-economically diverse urban school district. The study team had access to a cross-sectional study of school health environment data and student health, health knowledge, academic achievement, and demographic data. These data and their sources are presented in Table 1.

Table 1: Data Sources

Instrument/Cycle	**Description**	**Sample Variable**
School Health Profiles/Annual: Every Spring	Describes the school health environment.	Minutes of physical education Minutes of health education Existence of a School garden
DC CAS Health/ Annual: Every Spring	Assessment of health education knowledge for 5, 8, 10 grades.	Test score for each grade level at each school.
DC Comprehensive Assessment System (CAS)/Annual Every Spring	Academic Student Achievement in reading, writing, math and science test scores	Percent students passing the comprehensive assessment exam
Enrollment Data/Ongoing	Student demographics	Student enrollment data. Number of students eligible for free or reduced lunch

The School Health Profile (SHP) is a self-report survey measure, completed by the school principal or his/her designee annually. The SHP includes items related to each of the implementation of provisions of the HSA, including items related to the nutritional components of the school menu, minutes allocated toward Physical and Health Education, curricular alignment with the city's health standards, and the presence of a school garden.

4.2 Analysis

The items from the SHP were aggregated into a school health compliance score. The compliance score indicates the strength of the policy implementation at the school level. The compliance score range is 0 – 38, and the mean compliance score for DC public schools and DC public charter schools is 23 and 25, respectively.

Figure 2: Elements of the Compliance Score

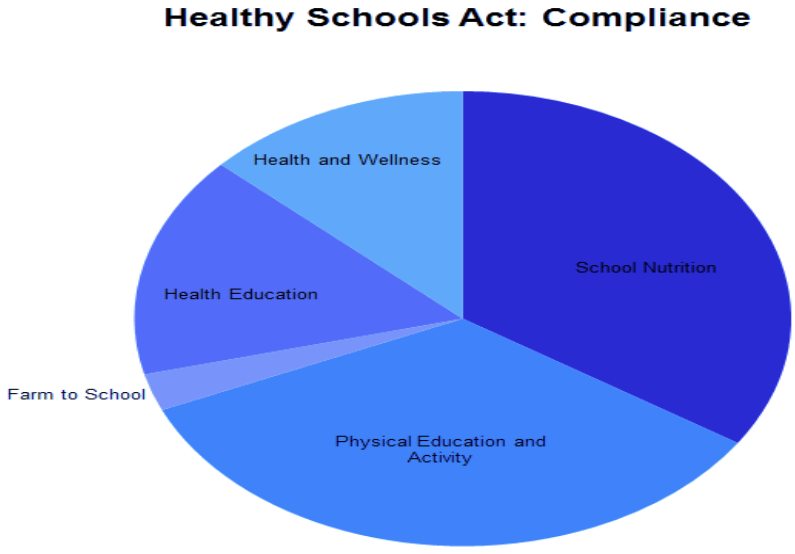


Figure 2 illustrates the components that make up the compliance score. Data from the SHP were combined with school-level data from reading, math, and health education components of the DC Comprehensive Assessment System (DC CAS), the standardized assessment tool used to measure student achievement. The DC CAS also includes assessment of health and physical education (PE) knowledge.

We then constructed a relational database to organize the data and made use of STATA, the statistical analysis software, to present descriptive findings from the available data and undertake exploratory analyses when possible. Data are organized at the school level.

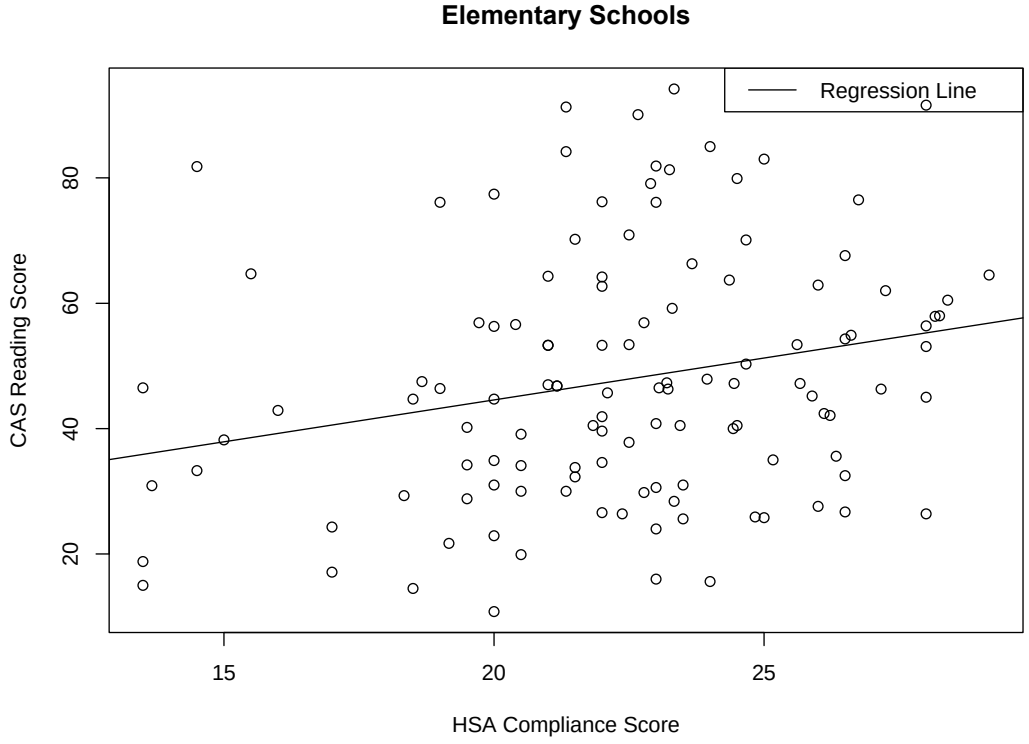
5. Findings

Table 2: CAS Health Scores for 5th and 8th Graders

Year	**Emotional Health**	**Safety Skills**	**Human body & personal health**	**Disease Prevention**	**Nutrition**	**Alcohol, Tobacco & other drugs**	**Healthy Decision Making**	**PE**
5th Grade								
2012	77%	66%	44%	66%	70%	52%	59%	63%
2013	78%	66%	45%	66%	72%	52%	59%	65%
8th Grade								
2012	76%	68%	58%	70%	50%	64%	70%	51%
2013	76%	66%	59%	71%	50%	64%	71%	55%

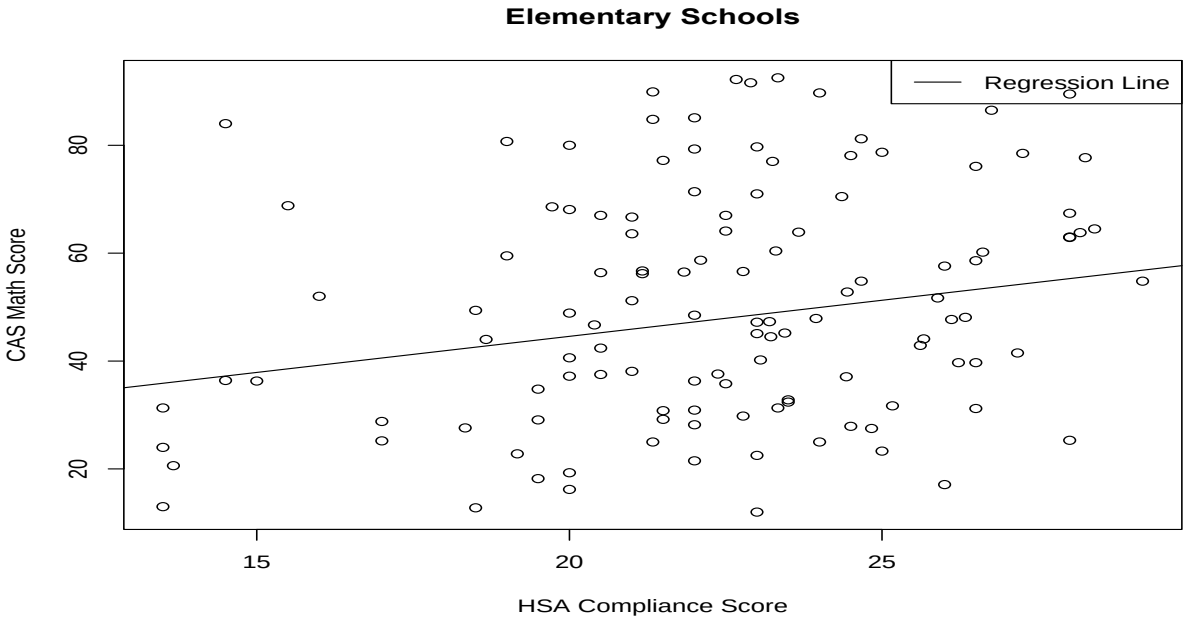
Table 2 presents the percentage of children who achieved proficiency in the health knowledge component of the DC CAS. The data for both groups is generally flat, showing that over the first two year of implementation of the HSA, almost the same percentage of students performed at the proficient level in each area of the assessment. The low percentages of scores at the proficient level for personal health (including awareness of sexually transmitted diseases) and nutritional awareness may indicate a lack of knowledge related to high-risk behaviors and over-eating. Also remarkable are the generally low percentages of 8th graders who seemed to understand the importance of physical activity.

Figure 3: DC CAS Reading Score and HSA Compliance Score for Elementary Schools



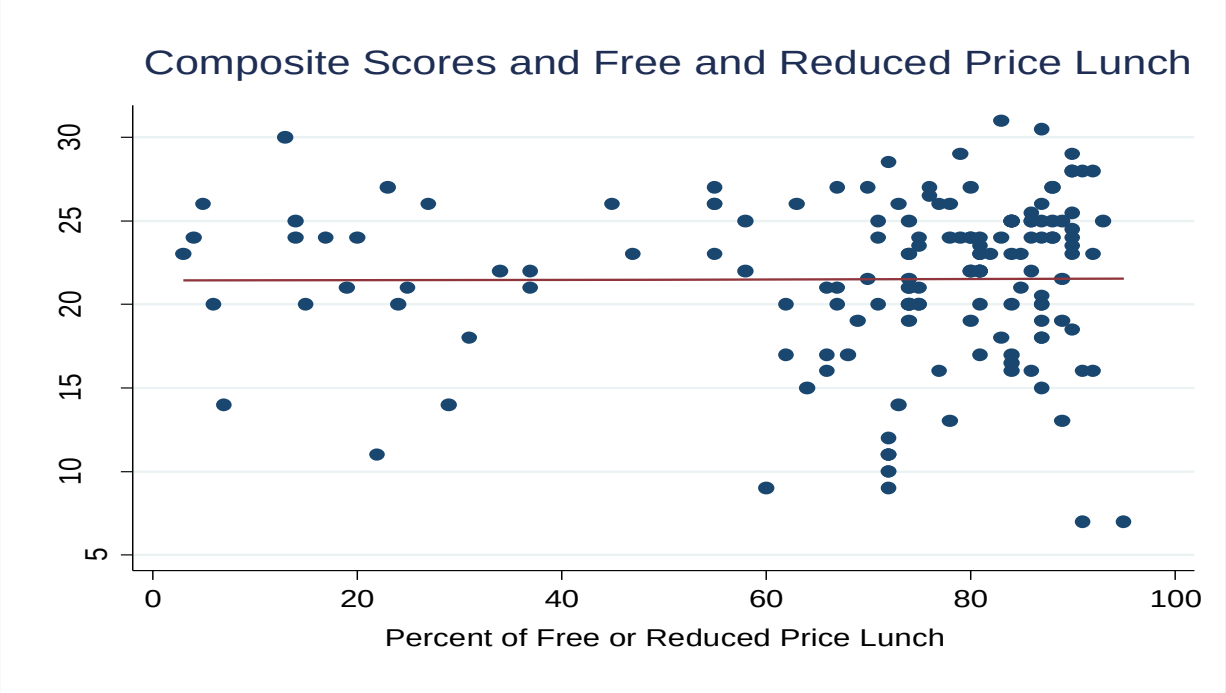
In Figures 3 and 4, we present a visual representation of the relationship between compliance score and student achievement. The vertical axis represents the percentage of children at each school who performed at the proficient level for either reading (Figure 3) or math (Figure 4) on the annual standardized assessment.

Figure 4: DC CAS MATH Scores and HSA Compliance Score for Elementary Schools



The horizontal axis presents the school health compliance score for elementary schools. Each of the dots on the graph represents the intersection between these two data points for each school. We also fit regression lines to show the general relationship between these two variables. Although the regression is not statistically significant, we see a generally positive relationship between these two variables. This positive correlation is consistent across demographic groups.

Figure 5: Compliance score and percent of children eligible for FARM



Finally, Figure 5 illustrates the relationship between the percentage of children eligible for Free and Reduced Prices Meals (FARM) and the compliance score. We present this figure to illustrate two points: 1) DC is home to two distinctly different types of schools relative to this demographic, with the majority serving at least 70% of children who are eligible for FARM and 2) that the variability relative to the provisions of the HSA seem relatively even among these two groups. This particular finding suggests that schools that serve children on the higher and lower ends of the socioeconomic spectrum in DC are about the same relative to providing healthy foods and access to PE. However, the effect of the limited provision of the requirements of the HSA might be more profound in schools where children must rely on the system for food or access to healthy options. For example, in schools where 60% or more of the children are eligible for FARM, they receive breakfast, lunch, and a snack from the school meal program. These children rely on the school system for the majority of their nutritional intake – the lack of quality foods has a much more significant effect on these children's diets than for those children who do not depend on the school to combat hunger.

6.Discussion

As described above, the objective of this research was to understand the association between the school health environment, as operationalized by the compliance score, and academic achievement using the DC CAS data to make a claim that classroom teachers and students alike can benefit from a focus on student health. The findings illustrate that students' academic performance is better in schools where there is a greater focus on health. Given that teachers are held accountable for school health, this relationship is valuable to understand.

In general, the average compliance score across schools indicates that those schools have been successful in reaching the nutrition guidelines, offering a standardized health and physical education curriculum, and promoting farm-to-school activities. However, schools have not been successful in offering the minutes of physical or health education as mandated by the HSA.

We specifically wanted to use these data to determine if there was any relationship between compliance with the provisions of the HAS and academic achievement. Our assumption was that when children were able to have their foundational needs meet (vis a vis Maslow's first two levels) they would be able to attend more to performance in academic subjects. While we do find there is some relationship between higher composite scores and school-wide performance on standardized tests of reading and mathematics, the findings were not significant. However, when one takes into account that the schools included in this study do not perform equally on these assessments, we might conjecture that attention to these basic needs might be protective of further decline in academic performance. That is, perhaps the availability of nutritious foods and physical activity program in schools can have greater impact in schools where academic performance has been consistently low. Our approach and findings are similar to research that used Maslow's hierarchy to study the relationship between school health and academic outcomes. For example, Noltemeyer et al (2012) found that access to health programs at the foundational levels of the hierarchy resulted in increased, higher levels of academic and cognitive performance in the students they studied.

A comprehensive approach that includes multiple levels of influence and various elements of health (i.e. nutrition and physical activity as opposed to an isolated intervention) is most likely to be effective in managing children's weight (Katz, O'Connell, Njike, Yeh, & Nawaz, 2005). This statement is further supported by research that showed a positive correlation between reported health assets such as healthy weight, physical fitness, fruit and vegetable consumption, participation in exercise, food security, family meals, etc. and improved performance on standardized tests for reading, writing, and mathematics (Ickovics, Carroll-Scott, Peters, Schwartz, Gilstad-Hayden & McCaslin, 2014).

Obesity and poor health are not the result of a single cause; therefore, it is necessary to address various components that contribute to one's health decisions, such as the surrounding environment, access to physical activity and foods, community norms, etc. The concept of an ecological approach within the school setting addresses the various policy, school, and community agencies that play a role in the organization and success of these components (Lohrmann, 2008). The Centers for Disease Control and Prevention (CDC) encourages this type of programming with the outlined components of a coordinated school health program including: health education, physical education, health services, nutrition services, counseling, psychological, and social services, healthy and safe school environment, health promotion for staff, and family/community involvement (Basch, 2011).

7. Conclusions

According to Maslow's hierarchy, the most basic needs of all humans are related to physical and safety requirements. While teachers in the U.S. have been asked to focus on students' basic safety as well as social-emotional health in recent years, there has been little attention to the benefits of an increased emphasis on teachers' roles in children's physical health. Studies, including this one, provide direct evidence that improving students' physical health, namely through access to high-quality nutritious food and increases in physical activity, can positively impact educational achievement and social-emotional development. Classroom teachers can benefit from a focus on student health in that it results in improved academic outcomes for their students. These types of research findings have led to changes in policies and programming related to school meals and physical education, such as the Healthy, Hunger Free Kids Act (2010), the Child Nutrition and WIC Reauthorization Act (2004) in the US, and to increases in the proliferation of school gardens, school wellness councils, and health education time. To ensure more consistent implementation of those policies and programs, more attention is needed on the research base regarding teachers' impact on students' health and long-term outcomes.

Schools cannot meet all of a child's needs on their own. But when teachers and school administrators are supported in attending to children's basic needs, they can work with community-based agencies to ensure that these basic needs are met. Teacher education needs to include opportunities for future educators to develop an understanding and the skills to not only assess students' health and well-being, but also to make use of organizations in the community that can support their students.

Existing empirical evidence indicates that specific health promoting interventions can promote child development, reduce gaps in school readiness, and improve outcomes in later life. Findings from randomized, controlled trials and quasi-experimental studies show that high-quality programming focused on health and nutrition can reduce gaps in educational achievement and improve adult outcomes, including teenage pregnancy, welfare dependency, arrests, and earnings (Love, Kisker, Ross, Schochet, Brooks-Gunn, Boller, & Berlin, 2001; Patalay et al, 2015). Consistent evidence indicates there is a symbiotic relationship between addressing disparities in child achievement and reducing inequities in health across the life span, both of which are equally critical to the long-term success of the individual and our society. Classroom-based preventative and promotional approaches have been found to effectively enhance social and emotional functioning (Patalay et al, 2015).

While there is evidence that academic achievement is related to improved nutrition (Anderson, Gallagher & Ritchie, 2017; Cutler & Lleras-Muney, 2006; Fiscella & Kitzman, 2009), the effect of teachers' roles needs to be highlighted (Bell, 2017). The culture and climate of the school are often directly reflected in the quality of food available for students and can highlight social justice and equity issues (Weaver-Hightower, 2011). Although this research and others demonstrate a relationship between health and academics, there is often little attention given to the intersection of these important issues. Ruglis and Freudenberg (2010) suggest that segmentation between the educational and health systems in the U.S. result in a lack of attention and focus on the reciprocal relationships between health and school achievement. Schools should be central, not only fostering academic development, but also providing students with comprehensive health supports, from food to violence prevention programs to health clinics to health education. In order to meet the demands of current initiatives related to student achievement and to create healthier school environments, schools will have to work in the cafeteria, on the playground, and in classrooms to increase awareness of health issues and to develop academic programming that addresses core subjects integrated with health knowledge and practice. Further, in order to invest the time and effort required to make school-wide changes in the school health environment, school leaders must be convinced that these changes will reap benefits in the classroom, as well as in the long-term health of the children.

As Maslow asserts, if the physiological needs of a child are not met, he or she will have difficulty with problem solving, creativity, and even friendships (Burton, 2012). In order to truly educate the whole child, it is essential that we include nutrition and physical health into the equation. Academic achievement and education are critical determinants of health across the life span; disparities in one contribute to disparities in the other (Fiscella & Kitzman, 2009). By drawing attention to the evidence that shows that teachers can have a profound effect on student health and academic development, teachers can play an important role in students' overall development. Without attention to students' basic physical health, other aspirational education policies simply cannot be achieved.

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