Physical Activity in Schools

Executive Summary

Schools have long been identified as having an important and often frontline role in identifying public health needs in students, and they have implemented several successful initiatives such as entrance vaccinations, dental examinations, vision and hearing screenings, and mental health services. Due to increasing youth obesity rates, schools have been called upon to promote physical activity. Missouri law (RSMo 167.720) requires at least one physical education course per week for all K-12 students and at least one 20-minute recess per day for elementary students. Statewide policies to improve exercise and health in schools may be a promising approach to address the primary risk factors of obesity.

Highlights

- In Missouri, approximately 32% of children are considered to be overweight or obese and 74.9% of children do not meet current physical activity guidelines of 60 minutes of moderate-to-vigorous physical activity per day.
- Youth who are active in childhood are likely to remain active into adulthood, while those who are inactive are likely to remain sedentary throughout the lifespan.
- Recess and physical education requirements in schools account for approximately only 31-36% of daily physical activity recommendations.
- School-based obesity prevention initiatives that educate and incorporate healthy, long-term activity behaviors in childhood might have the greatest chance to reduce obesity rates.

Limitations

- The prevalence of obesity and physical inactivity is generated from self-report data and school health screenings which can have inherent variability. Individuals may inaccurately report weight and physical activity metrics.
    - Body mass index is associated with numerous chronic lifestyle diseases but it is not the definitive, gold standard for assessing obesity and health.
- The effects of nationwide closures of schools during the COVID-19 pandemic on physical activity and obesity in children are currently being investigated.
- Schools in communities of low socioeconomic status may not have available resources to promote physical activity.

Research Background

For more general information on obesity and Missouri-specific initiatives, please see our previous Science Note: Landscape of Obesity in Missouri.

Childhood Obesity

Body mass index (BMI) is a person's weight in kilograms (kg) divided by their height in meters squared (m^2). Childhood obesity is defined as having a BMI greater than the 95th percentile for children of the same age and sex.[1] In Missouri, approximately 32% of children are considered to be overweight or obese.[2,3] Childhood obesity disproportionately affects children of minority groups and those of low socioeconomic status.[2,3] Obesity during childhood is a strong predictor of adult obesity and is associated with many costly, fatal chronic diseases such as cardiovascular disease, type II diabetes, and cancer.[4]

Causes of Obesity

Genetic, behavioral, and environmental factors contribute to the development of obesity. However, the two most significant causes are physical inactivity and poor dietary habits.[5]

Physical Inactivity

Habitual physical inactivity is associated with increased obesity rates and incidences of chronic diseases.[5] The Centers for Disease Control and Prevention, including governing organizations such as the American College of Sports Medicine, recommend that children participate in at least 60 minutes of moderate-to-vigorous physical activity per day. In Missouri, it is estimated that 74.9% of children do not meet current physical activity guidelines.[6] Generally, physical activity declines as children progress through adolescence into adulthood. Youth who are active in childhood are likely to remain active into adulthood while those who are inactive will often remain sedentary throughout the lifespan.[7]

Poor Dietary Habits

A healthy, nutritious diet is one that includes vegetables, fruits, whole grains, fat free or low-fat dairy, and a variety of proteins while limiting saturated and trans fats, added sugars, and salt.[8] The Department of Elementary and Secondary Education provides basic nutrition standards for school meals. However, food insecurity is one important impediment that affects approximately 15% of Missourians and consequently, their dietary patterns.[9] Limited access to nutritious foods such as fruits and vegetables is related to poor diet quality for individuals of low socioeconomic status; this is due to cost and neighborhood food environments. As such, more readily available sugar-sweetened beverages and high-fat foods are eaten, increasing the risk for developing obesity and chronic diseases when compared to high income households.[10]

Opportunities for Physical Activity During the School Day

Schools have long been identified as having an important role in public health and have implemented successful initiatives such as entrance vaccinations, dental examinations, vision and hearing screenings, and mental health services. Schools provide limited opportunities for children to engage in physical activity through recess and physical education. Research estimates that approximately 31-36% of the physical activity guidelines can be achieved during the school

day, with the majority of activity coming from lunchtime recess and physical education class.[11] After school programs can supplement existing programs like recess and physical education for accruing physical activity, however, these programs are not quality controlled and implemented at the discretion of each school.[12]

In recent years, many schools nationwide are reducing total recess time throughout the school day to focus on academic achievement and to decrease behavioral issues.[13,14] However, research has shown that providing recess for students has been linked to increased concentration and learning for students.[13,14] Data from the Robert Wood Johnson Foundation indicates that 40% of U.S school districts have reduced or eliminated recess and approximately 25% of elementary institutions no longer provide recess to all grades.[15]

Not only do these opportunities have potential health benefits, but also serve a purpose for children who do not have safe access to physical activity opportunities in their home environments. With the closure of schools during the COVID-19 pandemic, opportunities to participate in physical activity may have been greatly reduced for all children, especially those in violent neighborhoods or communities of low socioeconomic status. The implications of COVID-19 and school closures on childhood obesity are currently being investigated.[16]

The Effects of Physical Activity on Academic Performance

There is a positive relationship between physical fitness, physical activity participation and learning.[14] It has been shown that, in general, children with higher levels of fitness perform better academically.[14,17] One study examined 259 public school students in third and fifth grades, and found that assessments of physical fitness were related to total academic, math, and reading achievement scores.[17]

Additionally, research indicates that children who engage in physical activity prior to learning a specific concept perform better than children who did not engage in physical activity. The *Sports, Play, and Active Recreation for Kids* (SPARK) curriculum emphasizes increased health-related physical activity during physical education courses three times per week.[18] A study investigated the effects of the SPARK curriculum in a 2-year health-related physical education program on standardized academic achievement scores in 759 fourth and fifth grade children in California. The study showed significant improvements in test scores when compared to a similar school without the SPARK curriculum.[18] This intervention showed that more time in physical education courses (or engaging in more physical activity throughout the school day) did not have detrimental consequences on academic achievement scores in children.[18]

State Policy Aimed at Reducing Childhood Obesity

In general, school-focused policies for reducing childhood obesity may include school nutrition and education, student fitness screenings, diabetes screenings, physical education and recess requirements, and school wellness policies.[19]

Missouri law requires at least one physical education course per week for all K-12 students and at least one 20-minute recess per day for elementary students (RSMo 167.720). Students in elementary schools are required to participate in moderate physical activity for an average of 150 minutes per five-day school week. Middle school students may participate in physical activity during the school day at the school's discretion.

Currently, about 75% of US states have adopted basic requirements (e.g., PE curriculum, frequency, duration) for school PE classes.[20] These requirements vary greatly between states; for example, several states require physical education teachers to meet professional credential requirements, but those requirements are not standardized. Additionally, state regulations may not be monitored closely and implementation may vary by school district, especially in those communities of low socioeconomic status.[20]

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