

# Barriers and Strategies to Reducing the Incidence of Obesity among Black Girls in Primary and Secondary School

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## I. INTRODUCTION

Childhood obesity is a rising public health concern that disproportionately affects Black girls due to cultural, systemic, and environmental conditions unique to this demographic. Traditional family-focused and community-based obesity prevention interventions have had little to no effect on reducing the incidence of obesity in this high-risk group. This review of pertinent research offers insight into the distinct intersectional and cultural barriers to preventing obesity among Black girls, as well as socio-ecological barriers to increasing correlates to health and fitness including sports participation, physical activity (PA), and nutrition. The review then provides evidence indicating that culturally appropriate, school-inclusive, multidomain interventions may be more effective in preventing obesity among Black girls.

With an obesity rate of 29.1% and climbing, Black girls may be on track to have the highest prevalence of pediatric obesity in the United States (Fryar et al., 2020, Table 3). The prevalence of obesity among Black girls increased by almost 40% from 2013-2014 to 2017-2018 (Fryar et al., 2020, Table 3). Black female high school students already have the highest obesity rate among their adolescent peers (Winkler et al., 2017), as do Black adult women with an obesity rate of 56.9% (Hales et al., 2020). With restrictions caused by the COVID-19 pandemic disproportionately increasing the prevalence of obesity among children in younger age groups (Lange et al., 2021), it's imperative for policymakers to understand the specific challenges and strategies for reducing the incidence of obesity among this vulnerable group.

## II. DISCRIMINATION AND CULTURE: RISK FACTORS FOR DEVELOPING OBESITY

There are a multitude of poor outcomes related to childhood obesity in the short and long term for Black girls. Obesity in children of all races is associated with a higher risk of developing asthma and experiencing cardiovascular disease, cancer, and type 2 diabetes in adulthood. Obesity in Black girls is also linked to psychological health concerns, mainly worry, dissatisfaction with body size, poor emotional wellbeing, and chronic stress (Winkler et al., 2017). The biopsychosocial model proposes that psychological stress leads to weight gain not only through behavioral pathways such as increased food consumption and sedentariness, but also directly through prolonged exposure to biological stress mediators such as cortisol (Tomiyaama, 2013). Dismukes et al. (2018) found that race differences in cortisol emerged by 12 months of age, with Black infants having higher levels of cortisol than White infants. The evidence demonstrated that experiences of discrimination contributed to cortisol differences within Black infants, suggesting that racial discrimination is already “under the skin” by one year of age (Dismukes et al. 2018). These findings indicate that racial discrimination moderates the relationship between high levels of stress and greater increases in BMI overtime, such that the link is significantly stronger for Black girls compared to White girls (Tomiyaama, 2013). Obesity may then expose Black girls to additional discrimination or teasing based on weight, further compounding feelings of psychological stress and its subsequent detriments to physical health.

Given educational achievement is positively correlated to lower Body Mass Index (BMI) for Black women, researchers and policymakers should be mindful of how school environments systemically undermine Black girls’ academic achievement via implicit racial and gender-related biases. Contrary to the common view of schools as “great equalizers,” reproduction theory proposes that schools not only serve as sites for the construction of race, class, and gender identities, but they also reproduce existing inequalities in these areas (Morris, 2007). For example, race-based perceptions of Black girls as loud, assertive, and unladylike provoke biases in schools which promote a “quiet and passive” definition of femininity (Morris, 2007). Consequently, compared to White girls, White boys, and Black boys, educators of all ethnicities spend more of their class time promoting the social, rather than the academic, skills of Black girls (Grant, 1992, as cited in Morris, 2007). This bias stifles Black girls’ potential for high educational achievement and its subsequent protective qualities against obesity risks.

In addition to intersectional racism and sexism, cultural norms and values among Black girls and the Black community present notable barriers to reducing Black girls' risks for developing obesity. Prior research indicates a cultural difference in perception of body attractiveness, whereby African American girls generally select a larger ideal body size than girls of other ethnicities (Duncan et al., 2015). Whereas obese White female adolescents experience more rejection in the dating market than their non-obese counterparts, studies find no statistically significant difference in sexual behaviors and relationship experiences between obese and non-obese Black female adolescents (Ali et al., 2014), suggesting that Black male adolescents may also be more accepting of overweight individuals, and more likely to consider them sexy and attractive compared to White adolescents (Downing-Matibag & Neymotin, 2014). Both Black adolescent girls and boys typically prefer sedentary activities, spending more time than White and Hispanic adolescents watching TV and using the computer or playing video games (Joshi et al., 2016). Black girls also prefer leisurely activities over those requiring moderate-vigorous physical activity (MVPA), due in part to cultural concerns over how intense activity may affect their hair. Derogatory words describing natural hair such as unkempt, nappy, kinky, and poofy, have induced shame and internalized racism in Black women and girls for generations (O'Brien-Richardsons, 2019). Many view anything that serves to disrupt ideal beauty standards (particularly Eurocentric "straight hair" standards) such as water in the form of swimming or sweat induced by physical activity as a threat to body image, beauty, and self-confidence (O'Brien-Richardsons, 2019). Nevertheless, parallel sociocultural consequences and shame are absent regarding failures to adhere to Eurocentric standards for thinness, leading to fewer psychosocial motivations to maintain a normal weight among Black girls compared to girls of other races.

### **III. SOCIO-ECOLOGICAL BARRIERS TO OBESITY PREVENTION**

A "socio-ecological" framework that focuses on interactions between children's physical, social, and institutional surroundings in the context of their families, communities, and cultures is the best approach to understanding and preventing childhood obesity in all ethnic groups (Caprio et al., 2008). The following review looks at obesity risk factors from the political down to the individual level as they pertain to sports participation, physical activity, and nutrition among Black girls in primary and secondary school.

## *Sports Participation*

Per Title IX of the Education Amendments of 1972, opportunities in school-sponsored sports must be equitably distributed among students of different sexes. However, White girls disproportionately benefit from increased athletic opportunities, wide gender disparities among Black students persist. Girls at heavily minority schools have just 39% of the sports opportunities that girls at heavily White schools do (NWLC, 2015). K-12 schools also primarily offer interscholastic (i.e., competitive) sports, which due to their selectivity, are limited in their ability to provide a large proportion of students access to physical activity programming (Edwards et al., 2011). Although evidence suggests that Black girls may prefer intramural sports over interscholastic sports, Black students may be less likely than White students to attend a secondary school that offers these programs (Edwards et al., 2011), or to participate in such programs outside of school. A study by Edwards et al., (2011) found that only 36.3% of Black middle school girls participated in out-of-school sports compared to 60.3% of Black boys, 65.5% of White girls, and 68.4% of White boys. This discrepancy may be due in part to intersectional cultural perceptions that limit the sports in which Black girls feel welcome participating. That is, Black girls are pushed to join culturally appropriate sports like basketball, track and field (Bopp et al. 2017), and to a lesser extent volleyball and cheerleading, rather than softball, lacrosse, and “country club” sports associated with White athletic participation and Eurocentric cultural values. In contrast, White college students surveyed by Bopp et al. (2017) did not report comparable feelings of unwelcomeness regarding their participation in “Black” sports or sports with high levels of minority participation.

Research shows that parental support and parental income have a significant positive association with adolescent girls’ proclivity to play sports, likely because youth sports require not only emotional support (e.g., encouragement, discussion), but also investment and tangible support (e.g., time, transportation, fees) from parents (Duncan et al., 2015). Duncan et al., (2015)<sup>1</sup> found that unlike White and Latina adolescent girls, whose sports participation related to parental support and income only, friend support was also significant for Black girls. Although the study did not find an association between sports participation and BMI, Turner et al. (2015)<sup>2</sup> found a

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<sup>1</sup> Black girls exhibited higher sports participation compared to White girls. This trend runs counter to most research findings. The authors cite differences in reporting measures that may have led to a wider variety of activities captured in their study. Sampling was taken from Northwestern California.

<sup>2</sup> This study used a national sample and found lower sports participation among Black girls compared to White girls.

negative association between obesity and track (i.e., running), a more individually-focused sport. It is important to note that while BMI is a reasonable measure of adiposity in children and adolescents, it may not be a good indicator of adiposity among sport participants since it does not distinguish between muscle weight and weight from fat, skewing findings of no difference in obesity comparisons between sport participants and non-participants (Nelson et al., 2011). Nonetheless, Leek et al. (2011) found that older participants in more group-focused sports such as soccer and softball were less physically active than their younger counterparts, with fewer than 10% of 11-to 14-year-olds meeting the recommended 60-minutes of physical activity per day during sports practice. And while the average age that children enter and exit sports is 6 and 11 years old respectively, Black girls tend to join sports at later ages and are more likely than boys and White girls to have never played a sport or to drop out. (Zarrett et al., 2020). The factors cited for influencing girls' aversion to sports participation include a lack of access, decreased quality of experience including poor facilities and nonoptimal playing times, and a shortage of positive role models for Black girls especially (Turner et al., 2015).

### *Physical Activity*

Provisions in the Every Student Succeeds Act (ESSA) relinquishing the federal governments' academic accountability privileges have reaffirmed states' dispersed power over education policy, a dynamic which encourages incohesive and insufficient health and physical education standards across the country. Most primary, middle, and secondary schools in the U.S. do not provide students with 30 minutes, let alone 60 minutes of daily physical activity in physical education (PE) classes, that is if students are even required to attend daily (Caprio et al., 2008). Political structures encouraging school funding via local property taxes further beget racial and socioeconomic (SES) segregation and disparities in quality of school-provided resources promoting PA such as gyms, equipment, and playgrounds. In a cross-sectional study, Richmond et al. (2006) found that approximately 80% of Hispanic and Black adolescents attended schools with populations that were less than 66% White, whereas nearly 40% of White adolescents attended schools that were over 94% White. Although Black and Hispanic girls typically attended poorer schools and reported lower levels of PA, there was no difference within schools between Black, White, and Hispanic adolescent girls' PA levels (Richmond et al., 2006). That is, while previous studies have shown a robust association between household income and youth PA (especially among girls), after considering characteristics of the school that students attended (i.e.,

school income and school quality), individual family income was no longer significantly associated with PA in either boys or girls (Richmond et al., 2006 as cited in Turner et al., 2015).

Researchers have hypothesized that Black girls' physical activity outside of school may be limited due to unsafe neighborhoods, poor transportation, and insufficient or inaccessible resources such as a lack of playgrounds, parks, and childcare services for younger siblings. While Barr-Anderson et al. (2017) found that total PA was positively associated with the neighborhood Physical Activity Resource Assessment (PARA) Index for Black youth, Clennin et al. (2019) found that neighborhood socioeconomic deprivation (SED) was a significantly stronger predictor of childhood obesity, with Black youth comprising 71.1% of youth in the lowest SED quartile (Clennin et al., 2019, Table 2). In terms of interpersonal correlates, Barr-Anderson et al. (2017) found that Black boys and girls' PA was positively associated with parent report of youth's enjoyment of PE, parental support for their youth's PA, and parental sports participation, in addition to friend support and teacher support for Black girls' only. Black girls' PA was shown to decline in middle school and did so more steeply compared to White and Hispanic girls (Barr-Anderson et al., 2017). A systematic review investigating the factors related to obesity among Black adolescent girls indicated that reduced physical activity was directly associated with an obese weight status among this group (Winkler et al., 2017), supporting additional evidence wherein lower levels of physical activity, higher inactivity, and a larger perception of ideal body size emerged as the most important contributory factors differentiating obese Black girls from their overweight counterparts (Gordon-Larson, P., 2001).

### *Nutrition*

Although the Healthy, Hunger-Free Kids Act of 2010 was designed to enforce standard nutritional guidelines for school meals, there have been notable rollbacks in these standards since 2018. More recently, large corporations in the food and beverage industry have acted opportunistically during the COVID-19 pandemic, encouraging policymakers to waive even more nutritional requirements so that schools may offer a more limited variety of vegetables and fewer fruits (State of Childhood Obesity, 2021). Researchers agree that such a change would disproportionately impact Black girls given Black students are more likely than all other race/ethnicities to attend a school where most

students qualify for free or reduced-price lunch (FRPL) under the National School Lunch Program (National Center for Education Statistics, 2019); and regarding diet, evidence demonstrated that only lower intakes of fruits and vegetables distinguished obesity from overweight among Black girls (Brogan et al., 2012).

Although schools located in predominantly Black neighborhoods offer a balance of nutrient and energy dense foods, McDuffie & George (2009) found that Black adolescents consumed energy-dense foods at almost twice the rate of nutrient-dense foods, many using their lunch money to purchase energy-dense foods through vending machines and retail sources outside the cafeteria. Black youths' preference for food outside of school highlights the important influence of neighborhood food options on health. While fast-food consumption is positively associated with obesity, especially among low-income individuals, predominantly Black neighborhoods have 2.4 fast-food restaurants per square mile compared to 1.5 restaurants in predominantly White neighborhoods (Block et al., 2004). Brogan et al. (2012) found that availability of neighborhood full-service grocery stores was inversely related to obesity in Black female adolescents. At the family-level, Rollins et al. (2010) found that unlike White children and Black boys, for whom family meals were protective of obesity, no such relationship existed among Black girls. Possible contributors to this lack of correlation include feeling obligated to eat "grandma's cooking" despite its unhealthy preparation and overeating when families overfed them (Winkler et al., 2017). Although obese Black girls are more likely than their overweight and normal weight counterparts to report skipping meals (Winkler et al., 2017), after controlling for socioeconomic factors, Sherwood et al. (2004) found that they also have higher intakes of calories, dietary fat, and saturated fat compared to White girls, and are significantly more likely to eat big helpings, eat fast food, and eat while watching television or doing homework.

### **III. EFFECTIVENESS OF SCHOOL-INCLUSIVE POLICY INTERVENTIONS**

Research indicates that school policies can positively impact children's physical activity, dietary behaviors, and Body Mass Index (BMI) (Singh et al., 2017). A systematic review by Singh et al. (2017) finds that teacher trainings, developing activities related to food habits and/or physical activity, and multicomponent workbooks are effective in increasing children's physical activity

and promoting desirable outcomes in anthropometric measurements. In one study of more than 2000 children and adolescents aged 10 to 16 years, 25% of whom were Black, participation in as little as one high-intensity physical activity 3 to 5 days per week significantly decreased the ethnic- and SES-adjusted risk for being overweight (Crawford et al., 2001). Moreover, research has repeatedly demonstrated that participation in an organized sport as a child is positively associated with participation in sports and other physical activities in adulthood (Edwards et al., 2011).

After controlling for race/ethnicity and SES, Taber et al. (2013) found that strong state laws containing specific PE time requirements were more positively associated with PE attendance and PA among girls. Furthermore, evidence indicates that higher self-efficacy and enjoyment of PE are also positively associated with participation in structured PA among girls of all races (Barr-Anderson et al., 2007). Pate, et al. (2007) designed a two-pronged longitudinal intervention that promoted stronger PE requirements and higher self-efficacy and enjoyment among a racially comparable sample of White and Black 9<sup>th</sup> grade girls. At the end of 9<sup>th</sup> grade, 45% of girls in the intervention schools compared to 36% in the control schools, averaged one or more blocks of vigorous PA per day over a 3-day period (Pate et al., 2007). By 12<sup>th</sup> grade, girls attending schools with high-intervention maintenance were more likely ( $p = 0.04$ ) to report one or more blocks of vigorous PA per day than girls in the combined group of low maintainer and control schools, a difference which bordered on statistical significance after controlling for BMI and race/ethnicity ( $p = 0.07$ ) (Pate, et al. 2007).

Singh et al. (2017) found that school food and nutrition policy and school district sugar-sweetened beverage policies are effective in changing children's dietary behavior. The implementation of stronger nutrition standards for school meals and snacks through the Healthy, Hunger-Free Kids Act was associated with a significant reduction in the risk of obesity for impoverished Californian youth (Kenney et al., 2020). These findings indicate that there may be a substantial link between quality of school nutrition standards and eligibility for free or reduced-price lunch, suggesting that policies ensuring that schools offer highly nutritious lunches may be crucial to promoting a healthy diet and preventing obesity in Black girls.



Evidence suggests that incorporating culturally appropriate, community-based interventions involving parents is effective in promoting healthy behaviors among Black girls. A 12-week mother-daughter dancing intervention found notable increases in daily physical activity for both mothers and daughters, with higher increases in PA for girls who attended with their mothers compared to girls who did not (Alhassan et al., 2018). In support of the socio-ecological model, Saraf et al. (2012) finds that school-based interventions that integrate both community and family are significantly more likely than school-only interventions to prevent obesity risk-factors. Nonetheless, to comprehensively address the childhood and adolescent obesity epidemic, Arkansas enacted Act 1220 of 2003 – a series of community- and school-based interventions that promote transparency to parents about the physical health (i.e., BMI) of their child (Justus et al., 2007). By involving students, families, communities and schools, and standardizing health protocols and measurements, Act 1220 demonstrates that multidimensional policy has the potential to successfully curb the incidence of childhood obesity. State levels of childhood obesity did not increase for almost a decade after Act 1220 was passed into law<sup>3</sup> (Arkansas Center for Health Improvement, 2004 & 2014). Despite concerns around negative social and emotional consequences for students and excessive demands on health care, evaluation data suggests that few adverse effects have occurred in either of these areas of concern (Raczynski et al., 2009).

#### IV. CONCLUSION

Improving and intensifying efforts to promote physical activity and healthy eating is entirely consistent with the fundamental mission of schools – That is, equitably educating young people to become healthy, productive citizens who can make meaningful contributions to society (Wechsler, 2004 as cited in Joshi et al., 2016). Because complex interactions between intersectional discrimination, cultural norms, and institutional relationships create unique barriers to obesity prevention for Black girls, culturally- and socio-ecologically-informed, multidomain legislation promoting sports participation, physical activity, and optimal nutrition in primary and secondary schools are necessary for effectively reducing the incidence of obesity in this susceptible group.

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<sup>3</sup> The prevalence of childhood obesity was 20.9% in 2003, 20.7% in 2012, and 23.0% in 2019 (Arkansas Center for Health Improvement, 2004, 2014, & 2019). There is scant evidence indicating why childhood obesity rates began to increase after 2012.

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