

Salud America!

The Robert Wood Johnson Foundation Research
Network to Prevent Obesity Among Latino Children



RESEARCH REVIEW
May 2013

Competitive Foods and Beverages Among Latino Students

Abstract

Latino youths are more likely to be overweight or obese than their White peers. This health disparity warrants specific attention in schools, where the Latino population is on the rise and students are widely exposed to competitive food items—food and beverages sold outside of federally regulated meal programs in vending machines, a la carte lines, and school stores. Access to competitive foods in schools has a disproportionately negative health influence among Latino students, and schools with a higher proportion of Latino students tend to have weaker policies regarding access to competitive foods in schools. Implementing and enforcing stronger nutrition standards for competitive foods and beverages will help all students have access to healthier snacks at school, which may positively influence body mass index (BMI) trends for all populations, especially those most at-risk of overweight and obesity.

This research review is a comprehensive assessment of all available evidence on access to competitive foods in schools and its impact on childhood obesity among Latino students.

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Introduction

Overweight and obesity continues to be a pressing public health issue among Latino children and adolescents. According to current estimates, more than 41 percent of Latino children and adolescents ages 6-19 in the United States are overweight and nearly 23 percent are obese.¹ In fact, both Latino and African-American children and adolescents are more likely to be overweight or obese than their White peers,¹ putting them at greater risk for developing weight-related health problems, such as cardiovascular disease, asthma, type 2 diabetes, liver disease, sleep apnea, and psychological stress.²

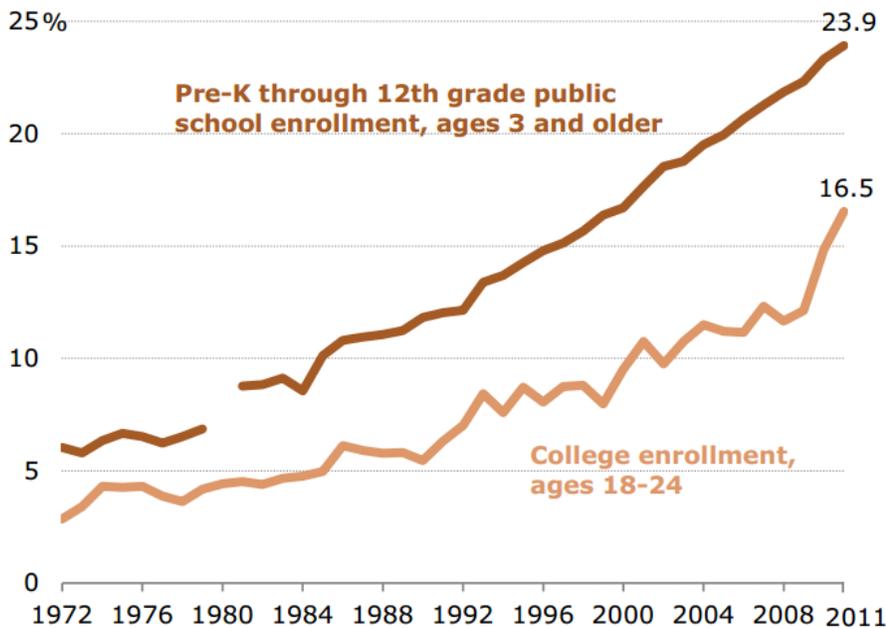
Because most students, including Latino children and adolescents, consume a significant proportion of their daily calories at school,³ foods and beverages available in schools influence students' diets and weight. Schools sell many foods and beverages to students outside of meal programs. A "competitive food" is defined as any food item that is sold in competition to the reimbursable school meal. These so-called competitive foods are widely available to Latino and other students through à la carte lines in the cafeteria, vending machines, school stores, snack bars, and other venues.^{4,5} Such snack foods and drinks are often high in fat, calories, sugar and/or salt, and offer little nutritional value.

The proportion of Latino students in U.S. schools is on the rise. In 1972 Latinos made up 6 percent of all public school students and in 2011 they made up 23.9 percent (Figure 1).⁶ Similarly, the nation's share of Latino children ages 17 and younger is expected to increase from 20 percent in 2005 to 35 percent in 2050.⁷

In response to the 2010 Healthy, Hunger-Free Kids Act, the U.S. Department of Agriculture (USDA) updated nutrition standards for the National School Breakfast and National School Lunch programs in early 2012. In January, 2013, USDA proposed updated nutrition standards for competitive foods and beverages—the first in more than 30 years. In anticipation of finalizing these standards, this research review summarizes current evidence regarding the impact of access to competitive foods in schools on diet and body weight among Latino students in grades 1-12.

More than 41 percent of Latino children and adolescents ages 6-19 in the United States are overweight and nearly 23 percent are obese.

Figure 1
Rise in Proportion of Latino Students Enrolled in US Public Schools Grades Pre-K Through 12, 1972-2011.



Data Source: Fry R, Lopez MH. Hispanic student enrollments reach new highs in 2011. In. Washington, D.C.: Pew Research Center; 2012.

Methodology

This comprehensive research review summarizes all available peer-reviewed scientific literature published between 2008 (after the introduction of the Institute of Medicine school nutrition standards in 2007) and September 2012 regarding the influence of access to competitive foods in schools on nutrition, overweight, and obesity among Latino students in grades 1-12. Keyword searches were conducted in PubMed and Google Scholar. Databases were searched with key terms such as: “competitive food AND Latino childhood obesity,” “competitive food in school AND obesity AND Hispanic,” “competitive food AND childhood obesity,” “competitive food in school AND BMI,” and “competitive food in school AND access.” Article titles and abstracts were examined, and relevant articles were retrieved, independent of the study’s conclusions regarding the impact of competitive foods on Latino childhood obesity. Additional articles were identified through searches of the references of the initial set of publications found through keyword searches. To be included, the studies must have stated in the study abstract and/or methods that ethnicity was considered in the analysis or must have included a high proportion (greater than 30%) of Latino students in the study population. Search limits were confined to the English language.

Key Research Results

- General trends suggest that Latino students may have greater access to certain types of competitive food venues than White or black students.
- Latino students are more likely than non-Hispanic White students to purchase and consume unhealthy competitive food items in schools.
- Schools in predominantly Latino communities are more likely to have surrounding food environments that can contribute to unhealthy dietary intake. Therefore, reducing access to competitive foods in schools may not positively influence Latino childhood obesity if food outlets surrounding schools continue to provide unhealthy food items.
- Schools with a higher proportion of Latino students tend to have weaker policies regarding access to competitive foods in schools, and may be less likely to implement nutritional guidelines for competitive foods.
- Policies that reduce access to competitive foods in schools are likely to reduce Latino students' consumption of unhealthy items during the school day, potentially lowering their intake of empty calories. However, such policies do not necessarily improve students' overall daily nutrient intake.
- Strong policies for competitive foods in schools have the potential to improve the BMI status among Latino students and may be an effective strategy for reducing weight gain in this population.

Schools with a higher proportion of Latino students tend to have weaker policies regarding access to competitive foods in schools, and may be less likely to implement nutritional guidelines for competitive foods.

Studies supporting key research results

General trends suggest that Latino students may have greater access to certain types of competitive food venues than students of other ethnicities.

Two national studies suggest ethnic disparities regarding access to specific types of competitive food venues. An updated report of the National Secondary School Survey (Johnston 2008), a comprehensive study including a nationally representative sample of more than 700 public schools, found that in 2010, Latino middle-school students had significantly greater access to school stores or snack bars/carts than White or black students.⁴ Similarly, a large study (Finkelstein 2008) using data collected in spring 2005 as part of the third School Nutrition and Dietary Assessment (SNDA III) included a nationally representative sample of 395 U.S. public schools and found that Latino high-school students had greater access to brand-name fast foods in schools than their black or White peers.⁸ These findings support a general trend reported in the literature over the last few years that Latino students may have greater access to certain competitive food venues, such as à la carte lunch items, and as a result, less access to healthier options.³

Latino students are more likely to purchase and consume unhealthy competitive food items in schools when available.

Two large studies showed that Latino students were at least twice as likely as non-Hispanic White students to purchase from a vending machine, when available.^{9,10} While the link between vending machine use among middle-school students and

increased sugar-sweetened beverage (SSB) consumption had previously been established,¹¹ these studies contribute to the body of evidence that unrestricted access to vending machines influences purchasing behaviors and dietary practices of Latino students.

According to the first study (Thompson 2010), the majority of non-Hispanic Whites did not purchase from a vending machine, while the majority of students of other races or ethnicities reported purchasing on either 1 to 2, or ≥ 3 days/week. These results are based on cross-sectional, nationally representative, population-level YouthStyles 2005 survey data (collected July-August 2005) that included 869 public school children and adolescents who had access to a school vending machine, of which 20.5 percent were grouped as “Hispanic or other” ethnicity. Specifically, compared to non-Hispanic Whites, participants who were “Hispanic or other” were twice as likely to purchase from a vending machine 1 or more days per week. Respondents who reported frequent vending machine purchases were also more likely to have unrestricted access to vending machines and to report additional unhealthy dietary practices, such as consuming soda on a regular basis and purchasing pizza or fried food from the cafeteria 1 or more days per week.¹⁰

The second study (Park 2010) was a cross-sectional analysis based on the 2003 Florida Youth Physical Activity and Nutrition Survey that included a statewide representative sample of 4,322 students in 73 Florida public middle schools, of which 21 percent were Latino. This study found that, compared to non-Hispanic White students, when vending machines were available, Latino students were 2.2 times more likely to buy snacks or beverages from vending machines 2 or more days during the previous 5 days instead of buying lunch. This likelihood was even higher among Latino students who reported smoking cigarettes 1 or more days in the past 30 days. The primary factor influencing purchasing behavior was SSB consumption—students attending schools with beverage vending machines were 3.5 times more likely to buy lunch from vending machines. Additionally, among students who purchased lunch from vending machines, 72 percent reported buying both less-healthy snack and beverage options, providing further evidence that vending machines in schools facilitate the purchase of unhealthy snacks and beverages among Latino students.⁹

Two other studies support and extend these findings relating increased competitive-food purchasing to poor dietary behaviors observed among Latino students.^{12, 13}

According to a cross-sectional study (Briefel 2009) including a nationally representative sample of 287 public schools and 2,314 children and adolescents (22% Latino) in grades 1-12 from the SNDA III, Latino high school students consumed 47 kcal more from low-nutrient, energy-dense foods than their White peers. The authors observed such differences in school-day consumption across racial/ethnic groups, independent of household income level: Latino and non-Hispanic black high school students consumed more calories from low-nutrient, energy-dense foods than non-Hispanic White students, suggesting that reducing access to competitive foods could specifically benefit minority groups at high risk of obesity.¹²

Additionally, a state-level study (Gosliner 2011) including a majority-Latino (60%)

population of 5,365 seventh- and ninth-graders at 19 schools in multiethnic, low-income California communities found that students consumed more unhealthy foods at school and also purchased and consumed unhealthy competitive food items if available, independent of whether they participated in the school lunch program. The authors concluded that, in general, students consider it important to be able to purchase healthy foods, such as fresh fruits and vegetables, at school, but do not perceive their school food environment to be healthy and consume more unhealthy foods at school.¹³ Based on these findings, both studies suggested that reducing access to unhealthy competitive foods could improve dietary intake at school.

Schools in predominantly Latino communities are more likely to have surrounding food environments that can contribute to unhealthy dietary intake. Therefore, reducing access to competitive foods in schools may not positively influence Latino childhood obesity if food outlets surrounding schools facilitate availability of unhealthy food items.

Studies have previously demonstrated that the availability of unhealthy food venues near schools is associated with higher rates of childhood overweight.^{16, 17} For instance, a national study (Sturm 2008) including all (31,622) U.S. public middle and high schools found that Latino students were more likely to attend schools whose surrounding food environments included convenience stores, fast-food restaurants, snack stores or liquor stores. The authors concluded that this easy access to snacks, sodas, and fast food in the immediate vicinity of a school could negate positive school food policies, especially among students who can leave campus.¹⁴

Similarly, a smaller study (Tester 2010) assessed the presence of mobile food vendors after school in close proximity to six public schools in a predominantly Latino district of Oakland, Calif., in 2008. An average of five vendors were within a quarter-mile walk of each of the six schools on any given observation period. Over half of the transactions were performed by children only, and the majority of these purchases were at ice cream trucks or *paleteros* (ice cream pushcart vendors).¹⁵

Schools with a higher proportion of Latino students tend to have weaker policies regarding competitive foods in schools, and may be less likely to implement nutritional guidelines for competitive foods.

While most school districts have a policy that addresses competitive foods, results from several studies suggest that the policies at schools with more Latino students are generally weak, and many schools have not implemented them.¹⁸⁻²⁰ For instance, a longitudinal analysis of 6,300 racially and socioeconomically diverse students across 40 states that govern competitive food nutrition content (Taber 2012a) examined BMI status among adolescents from 2001-2008. Law strength and consistency were identified as two key factors affecting the law's positive influence on student BMI. States with a relatively high proportion of Latino students were more likely to have weak laws in 2003—laws that contained weak language or nonspecific standards—and, in turn, were less likely to have a positive impact on BMI than states with strong laws in 2003.¹⁹

A national study including all U.S. public middle and high schools found that Latino students were more likely to attend schools whose surrounding food environments included convenience stores, fast-food restaurants, snack stores or liquor stores.

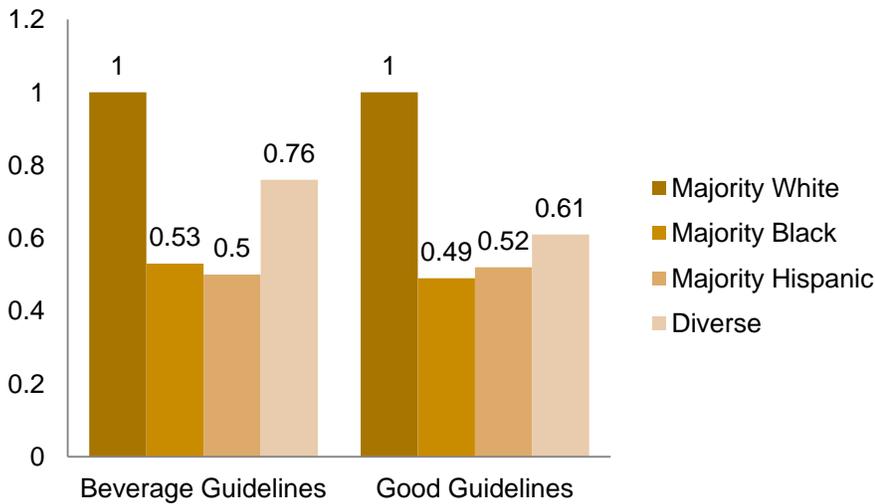
A cross-sectional study (Taber 2012b) conducted by the same author and using student data from the same cohort found that students reported lower in-school SSBs access and purchasing only when schools restrict all SSBs. Policies that restrict only soda, but allow sports drinks and other SSBs, had no impact on SSBs access or purchasing. According to this study, states with weaker policies that restrict only soda had higher proportions of Latino students (33%) than states that restrict all SSBs (11% Latino).²⁰

In 2006, the Alliance for a Healthier Generation launched the Healthy Schools Program that included adoption of nutritional guidelines for competitive foods and beverages. Based on survey data collected from a nationally representative sample of elementary schools between 2006 and 2010, awareness of the Alliance's food and beverage guidelines among school administrators significantly increased, and nearly one-third of the schools that sold competitive foods had implemented or were in the process of implementing the guidelines. However, schools with a majority of Latino students were less likely to implement the beverage guidelines (Figure 2).¹⁸

Policies that reduce access to competitive foods in schools are likely to reduce Latino students' consumption of unhealthy items during the school day, potentially lowering their intake of empty calories. However, such policies do not necessarily improve students' overall nutrient intake.

Two studies directly assessed the impact of California's statewide policies, effective since 2007, which established strict nutrition standards for competitive foods sold in schools.^{21, 22} Approximately one-third of the California population is Latino. The first study (Woodward-Lopez 2010) measured pre- and post-legislation food and beverage availability, sales, and student consumption at 99 California schools. Overall, the study found that, after legislation: the availability of foods and beverages compliant with the standards increased; the availability of noncompliant items (e.g., SSBs, chips, candy) decreased; and, as measured by student survey responses, at-school consumption of some noncompliant foods dropped, while at-home consumption of selected noncompliant foods remained stable. This study did not include a Latino-only analysis.

Figure 2
Relative Likelihood for Implementation of Alliance Beverage and Food Guidelines by Race/Ethnicity Among a Nationally Representative Sample of US Elementary Schools.



Data source: Ohri-Vaschaspati, P., L. Turner, and F.J. Chaloupka, *Alliance for a Healthier Generation's Competitive Beverage and Food Guidelines: Do Elementary School Administrators Know About Them and Do They Report Implementing Them?* *Journal of School Health*, 2012. **82**: p. 469-477.

However, a study of an ethnically diverse subpopulation of majority-Latino (65%) seventh- and ninth-graders across several schools, noted a significant post-legislation decrease in the consumption of both soda and vegetables (not including French fries) at school, and significantly more students reported drinking water at school. While the regulation of competitive foods improved school environments, observed improvements in student nutritional intake were modest.²²

The second study (Taber 2012c), using 24-hour recall data to analyze the nutrient intake of 680 high-school students, found that a majority-Latino (77%) population of California students consumed less fat, sugar, and an average of 158 fewer calories per day than students in 14 other states (in which 15% of students were Latino) that did not regulate competitive food nutrition content. These results remained consistent when the researchers restricted the analysis to only Latino students. The study also found that California students reported a lower intake of vitamins and minerals at school than students in other states. Although high-school students in California consumed fewer empty calories than students in states with no competitive food laws, the nutritional composition of the students' in-school diets was similar.²¹ Another study (Cradock 2011) involving a large, diverse population of public high-school students in Boston, where 39 percent of the study body is Latino, was the first to evaluate whether policies banning SSBs in schools would change adolescents'

overall consumption of SSBs. Based on a total of 2,033 survey responses from 2004 and 2006, Boston high-school students reported a significant decrease in daily consumption of SSBs both in-school and out-of-school from 1.71 servings in 2004 to 1.38 servings in 2006, equating to a reduction of 45 kcal per day. By comparison, national results, including approximately 12 percent Mexican-American adolescents, indicated no significant change in adolescent consumption of SSBs during the same timeframe. Despite the lack of a Latino-only analysis, these findings support the trend that implementing policies that restrict the sale of SSBs in schools may be a promising strategy to reduce Latino adolescents' intake of unnecessary calories.²³ These results are consistent with a 2004 policy statement of the American Academy of Pediatrics stating that district-wide policies restricting the sale of SSBs in schools can protect against health problems associated with over-consumption of these beverages.²⁴

Strong policies that reduce access to competitive foods in schools have the potential to positively influence BMI among Latino students and may be an effective strategy for reducing weight gain in this population.

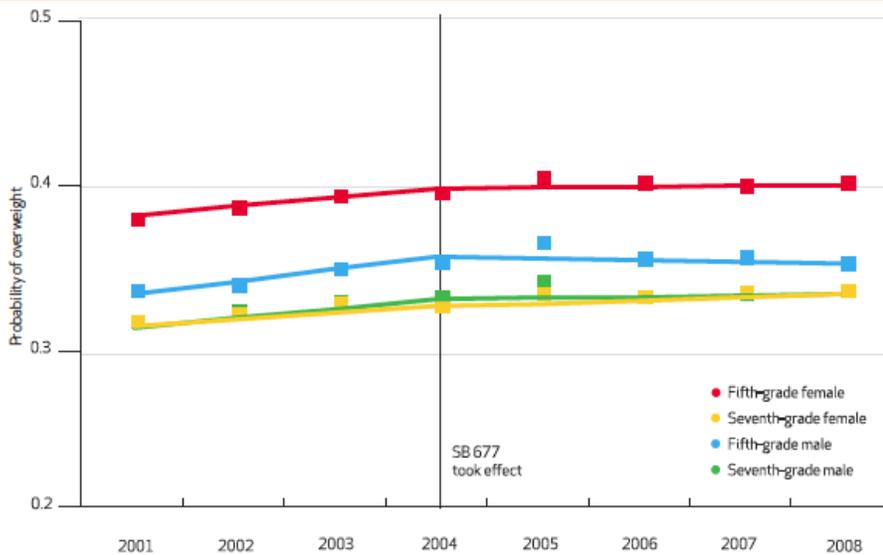
Several large studies have suggested that strong and comprehensive competitive food policies that are consistently enforced across grade levels and across venues may positive influence overweight and obesity trends among Latino children and adolescents.^{3, 19, 25} According to these studies, “strong” policies are those that include language requiring competitive foods to meet specific nutrition standards, rather than including recommended standards or references to “healthy” foods, and “comprehensive” policies are those that include not only changes to food items offered, but also address other areas such as fundraisers, nutrition education, and physical activity.

A California-based study (Sanchez-Vaznaugh 2010) linked strong policies limiting access to competitive foods to significant improvements in overall overweight trends among student populations with a high proportion of Latino children and adolescents. In the period before competitive food policies took effect (2001-2004), the prevalence of childhood overweight showed an increasing trend, but after the policies took effect (2005-2008), the trend in overweight prevalence stabilized (Figure 3). After the policies took effect, significant population-level improvements in overweight trends were observed among fifth graders in the Los Angeles Unified School District (78% Latino) and fifth-grade boys and seventh graders in the rest of California (48% Latino). This study included more than 5 million observations over an 8-year period using a majority-Latino population of middle-school students. The analysis was restricted to fifth- and seventh-grade students attending public school for whom annual physical fitness data, including height and weight measurements, had been recorded. According to the authors, the competitive food policies implemented in 2004 in California, and Los Angeles in particular, are among “the most rigorous and comprehensive” of such policies in the nation. However, due to study limitations, such as lack of randomization, the extent to which the new nutritional policies contributed to the change in BMI was unclear.²⁵

Several large studies have suggested that strong and comprehensive competitive food policies that are consistently enforced across grade levels and across venues may positive influence overweight and obesity trends among Latino children and adolescents.

Key findings from a 2012 health impact assessment (HIA) indicated that a national competitive foods policy may support a healthy weight and reduced risk of overweight or obesity among Latino students. Based on a thorough assessment of available evidence, the authors

Figure 3
Implementation of 2004 Competitive Food Policies (SB 677) in California
Stabilized Overall Overweight Prevalence Trends Among Middle Schoolers,
2001-2008.²⁵



Data source: Sanchez-Vaznaugh, E.V., B.N. Sanchez, J. Baek, and P.B. Crawford, 'Competitive' food and beverage policies: are they influencing childhood overweight trends? *Health Aff (Millwood)*, 2010. **29**(3): p. 436-46.

concluded that implementation of strong nutrition standards would benefit vulnerable populations, including Latino students, who are often more likely to have weight-related health issues.⁵

The HIA findings echo the collective conclusions of several other national studies indicating that policies aiming to reduce access to competitive foods in schools must be comprehensive, strong, and consistent to be effective, independent of ethnicity.¹⁹⁻²¹

To acquaint you with the most commonly used formats used in our documents, the next few pages present samples of styles. Body text variations include bulleted and numbered lists.

Conclusions and Policy Implications

CONCLUSIONS

- When competitive foods are available, Latino students are more likely to purchase and consume them than their White peers. Balanced nutrition in Latino children and adolescents is compromised by unrestricted access to competitive foods in schools.
- While most school districts have a policy that addresses competitive foods, the policies influencing schools with a higher proportion of Latino students are generally weak.
- Policies limiting access to competitive foods in schools may be undermined by a disproportionately higher numbers of fast-food restaurants, convenience stores, and mobile food vendors in close vicinity to Latino schools.
- Because of their high rates of obesity, Latino students would disproportionately benefit from specific nutrition standards for competitive foods in schools; such strong policies may positively influence BMI trends in this vulnerable population.
- Although many of the above observations can be made in all children and adolescents without regard to race or ethnicity, the findings have a stronger influence among Latinos, due to the rising percentage of the U.S. student population that is Latino and the high risk for weight-related health problems among Latino children and adolescents.

POLICY IMPLICATIONS

- Only competitive food policies that meet specific nutrition standards have been associated with decreased access to, purchase of, and consumption of competitive food items in schools. Therefore, to be effective, final federal regulations aimed at reducing access to competitive foods in schools must be strong, comprehensive, and consistently enforced across grade levels and venues.
- To improve the overall nutritional value of caloric intake among Latino students, minimum federal standards for competitive foods in schools must not only address access to competitive foods but should also include strong language stating specific nutrition standards
- Public health initiatives (e.g., nutrition education programs) that consider the schools' surrounding food environment and familiar cultural factors, such as convenience stores and mobile food vendors, may be especially beneficial in Latino communities.
- Because many schools with a high proportion of Latino students currently have weak or no competitive food policies, policymakers should prioritize helping schools, particularly those in Latino communities, effectively implement the finalized federal standards.

FUTURE RESEARCH NEEDS

To effectively address the issue of overweight and obesity among Latino children and adolescents, additional research is needed to better discern the impact of the school food environment on Latino weight status. Future studies should directly address the question of whether reducing access to competitive foods has long-term positive effects on BMI among Latino students. Additional studies should more firmly establish the contribution of competitive foods to Latino students' food choices and consumption patterns, as well as the extent to which the surrounding food environment in Latino communities contributes to overall dietary habits of Latino children and adolescents. Evaluation of efforts intended to enhance the school food environment will help identify areas with the greatest potential for further intervention.

Future research should prioritize addressing the ethnic disparity in the strength of and/or enforcement of policies related to competitive foods. More research is needed to understand why these disparities exist, as well as how to effectively implement strong competitive food policies in predominant Latino schools, especially in middle and high schools where access to competitive foods tends to be greater.

ABOUT THE PROGRAM

Salud America! The RWJF Research Network to Prevent Obesity Among Latino Children is a national program of the Robert Wood Johnson Foundation. The program aims to educate and support researchers, decision-makers, community leaders, and the public in contributing toward healthier Latino communities and seeking environmental and policy solutions to the epidemic of Latino childhood obesity. The network is directed by the Institute for Health Promotion Research at The University of Texas Health Science Center at San Antonio.

For more information, visit <http://www.salud-america.org>.

ABOUT THIS RESEARCH REVIEW

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