

Strengths and Limitations of Nutritional Policies in Public Schools in the United States

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Abstract

This thesis reviews the development of nutritional policies that have been created in the United States. As society's understanding of nutrition has increased and as obesity has become a major problem in the country today, the federal government, state governments, and individual school districts have implemented policies to improve the availability of more nutritious food items in public schools. This thesis then analyzes the strengths and limitations of these policies and the effects they have caused in student populations in order to determine whether they have accomplished their intended goals.

Strengths and Limitations of Nutritional Policies in Public Schools in the United States

Childhood obesity is a major health issue in the United States. Obesity is directly related to a person's body mass index, which is found by dividing a person's body weight in kilograms by the square of his height in meters. This value is then compared to values from the rest of the population. If it falls above the ninety fifth percentile, the person is classified as obese. For children and adolescents, there are both age-specific and sex-specific percentiles because body composition during these growing years varies greatly according to both age and gender (Centers for Disease Control and Prevention [CDC], 2015a).

The Prevalence of Childhood Obesity

The prevalence of childhood obesity has continued to increase. Since the year 1980, the incidence of obesity has increased from 5.0% to 12.4% among children aged two to five years old, from 6.5% to 17% among children between the ages of six to eleven years old, and from 5.0% to 17.6% among adolescents aged 12 to 19 years old (Ogden, Flegal, Carroll, & Johnson, 2002). The U.S. Department of Health and Human Services (DHHS) (2012) reveals that even in more recent years, the trend of obesity continues to increase, as the prevalence of children ages six to seventeen who are obese was 18% from the years 2009-2010 and 19% from the years 2011-2012. The Centers for Disease Control and Prevention (CDC) (2014a) reports that in the years 2011-2012, 8.4% of children aged two to five years old, 17.7% of children aged six to eleven years old, and 20.5% of adolescents aged 12 to 19 years old were classified as obese. Overall, obesity affects approximately 12.7 million children and adolescents from the ages of two to nineteen years old (CDC, 2014a). Clearly, this is a serious problem for the nation.

Factors Contributing to the Increasing Prevalence of Obesity

Many factors contribute to the increasing prevalence of obesity. Obesity is caused by an energy imbalance that occurs when people consume more calories than they expend (Fryar, Carroll, & Ogden, 2014). This can be explained by both a lack of physical activity and an increase of calories from foods lacking optimal nutritional quality (Institute of Medicine of the National Academies, 2013).

Eating an abundance of calories from foods that give little to no nutrients is a major cause of obesity. Research indicates that overweight teenagers aged 12 to 17 years old consume an average of 700 to 1,000 additional calories from foods with little nutritional value each day, which, over the years, can add a significant amount of unnecessary body weight (United States Department of Health and Human Services [USDHHS], 2012).

Another factor that contributes to the increasing trend of obesity is a lack of physical activity. The USDHHS (2012) reports that only 49% of boys aged six to eleven and 35% of girls in this age group get the recommended amount of at least 60 minutes of physical activity each day. Furthermore, a mere 8% of adolescents between the ages of 12 and 15 years old obtain this recommended amount (USDHHS, 2012). This can be attributed to the fact that most children and adolescents aged eight to eighteen years old spend more than six hours each day on average watching television, playing video games, and using other types of media (Kaiser Family Foundation, 2010). Similarly, whereas 42% of children in 1969 walked or biked to school, this rate has dropped to a mere 16% in 2001 (CDC, 2005).

Therefore, all of these factors contribute to the increasing prevalence of childhood obesity as children are suffering from little physical activity and eating foods that provide little nutritional quality.

Problems with Obesity

Obesity is a major cause for concern in the United States because it causes many health complications and adds an economic burden.

Diseases and other health risks associated with obesity. Obesity is associated with several health problems. According to the CDC, obese children and adolescents have increased chances of acquiring orthopedic-related complications, fatty livers, sleep apnea, psychosocial issues as well as a 60% increased risk of developing asthma (2012a). Obese youths also have an increased chance of developing type two diabetes and cardiovascular disease. There are a number of risk factors that indicate a person's likelihood of developing cardiovascular disease, including high blood pressure, high levels of cholesterol, and unusual glucose tolerance. Among young people who are obese, 39% of them have at least two risk factors for cardiovascular disease (CDC, 2012a).

Economic burden. Obesity also involves an economic burden, costing the United States billions of dollars in health expenses each year. Research suggests that for each obese child with private insurance, the average healthcare cost is approximately \$3,700 each year, and for each obese child with Medicaid, the average cost is approximately \$6,700 each year. Researchers have calculated these costs and concluded that the national cost is about \$11 billion for obese children covered by private insurance and about \$3 billion for obese children covered by Medicaid. The medical costs of obese

children are so much higher than those for children of normal body weights because obese children are two to three times as likely to have to stay at the hospital for an extended time due to other health complications associated with obesity. Furthermore, children with obesity have a greater chance of being diagnosed with mental health disorders, diseases of the bones and joints, diabetes, and heart disease, all of which require expensive medical treatment (Marder, 2006).

The importance of countering childhood obesity. Clearly, it is important to take efforts to reduce the prevalence of obesity. Statistics show that those who are obese at an early age are more likely to grow up to be obese. A four-year-old child who is obese has a 20% chance of becoming an obese adult, and even more dramatically, a teenager who is obese has an 80% likelihood of being obese as an adult (CDC, 2012a).

Nutritional Policies in the United States

Changing people's diets is an effective way of preventing obesity and improving the population's health. Eating nutrient-dense foods has several positive consequences, such as increased energy, improved metabolism, and weight management (Institute of Medicine of the National Academies, 2013). According to the Centers of Disease Control and Prevention, proper nutrition consists of three principles: variety, balance, and moderation (2015b). Because foods from each of the five major food groups contribute differently to the optimal growth and development of children, eating a variety of foods is essential. Similarly, eating a balanced diet that consists of appropriate amounts of foods ensures that the body obtains the necessary calories and nutrients. In order for the body to perform effectively and efficiently, it needs a healthy balance of foods that enable it to do a variety of essential activities, from regulating body temperature to strengthening the

immune system to stabilizing the metabolism. Each nutrient in foods enables the cells that make up the human body to perform their necessary functions, and without these needed nutrients, the body would not be able to grow, develop, and continue to do its normal activities. Lastly, moderation is important to ensure the body does not receive an excess of calories or nutrients, which could then result in weight gain. Moderation helps prevent high cholesterol and reduce the risk of becoming obese (CDC, 2015b).

The Importance of Dietary Policies

The benefits of proper nutrition are numerous. There is much evidence that shows that eating healthy is an effective approach to preventing and reducing childhood obesity. The Harvard T. H. Chan School of Public Health (2016) reports that foods such as whole grains, fruits, vegetables, and nuts have been shown to help prevent the onset of obesity and help with weight control. Researchers have found that the types of foods people eat affect their weight status more than simply the amount of food they eat. Even simple strategies, such as reducing the intake of sugar-sweetened beverages can dramatically decrease the risk of weight gain and obesity. In fact, studies have shown that “for every addition 12-ounce serving of sugary beverage consumed each day, body mass index increases by 0.08 units” (Harvard T. H. Chan School of Public Health, 2016).

It is clear that a change in diet will result in lowered obesity rates. In an attempt to implement these dietary changes, the federal government, local governments, and individual schools have enacted a variety of dietary policies.

Nutritional policies for students. The health status of the nation’s children is crucial; therefore, many policies have been enacted to improve their nutrition by limiting the sale of foods that lack nutritional quality. In the United States, one area in which

these policies have gained attention is within the public schools. Over the years, many attempts have been made to create and expand upon laws that are aimed at enhancing the health of students. In relation to diet and nutrition, these laws focus on instilling healthier food and beverage items into meals and snacks available to these young people (Institute of Medicine of the National Academies, 2013).

The extent of nutritional laws. Since 1946, federal and state governments have enacted laws and policies that regulate the nutritional standards of foods served in public schools. These laws range in content from establishing minimum nutritional values of the items sold, to portion sizes of the items sold, to mandatory listing of the contents of the items sold. In addition to the federal policies, states and districts are able to make more stringent laws regarding nutritional requirements. Some states have very high standards, while others simply follow those set forth by the federal government (CDC, 2012b).

Richard B. Russell National School Lunch Act

The government has long recognized the importance of ensuring the proper health and nutrition of children. In 1946, President Harry Truman signed the Richard B. Russell National School Lunch Act into law. Its declaration of policy states:

It is hereby declared to be the policy of Congress, as a measure of national security, to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food, by assisting the States, through grants-in-aid and other means, in providing an adequate supply of foods and other facilities for the establishment,

maintenance, operation, and expansion of nonprofit school lunch programs.

(United States Department of Agriculture, 2014, p. 3)

This act established the National School Lunch Program, which is a federally-assisted meal program in public schools. It sought to improve the health of underprivileged children by offering them free and reduced-price lunches. This was the first national legal step towards creating a healthier youth by ensuring better nutrition for students.

Child Nutrition Act of 1966

In 1966, the United States Congress enacted the Child Nutrition Act of 1966, giving the Secretary of Agriculture the authority to create rules and regulations. Its declaration of purpose states:

In recognition of the demonstrated relationship between food and good nutrition and the capacity of children to develop and learn, based on the years of cumulative successful experience under the national school lunch program with its significant contributions in the field of applied nutrition research, it is hereby declared to be the policy of Congress that these efforts shall be extended, expanded, and strengthened under the authority of the Secretary of Agriculture as a measure to safeguard the health and well-being of the Nation's children, and to encourage the domestic consumption of agricultural and other foods, by assisting States, through grants-in-aid and other means, to meet more effectively the nutritional needs of our children. (United States Department of Agriculture, 2010a, p. 2)

This act established the Special Milk Program for nonprofit high schools with the intent of encouraging children to consume more milk. It also established the School Breakfast

Program, which gave the Secretary the ability and funds to begin nonprofit breakfast programs in all public schools.

This program provided low-cost or free breakfasts to children from low socioeconomic backgrounds whose parents met the determined financial requirements. Each breakfast which these schools served was required to meet certain nutritional standards prescribed by the Secretary. The breakfasts had to consist of a variety of foods, which ensured that underprivileged children had the opportunity to obtain the nutrients their bodies needed. Under this program, the nutritional quality of the breakfasts from each school was assessed based on weekly data about the content of the foods served. The standards that the breakfasts were required to meet also had the potential to change as new nutritional research developed (United States Department of Agriculture, 2010a).

These programs that the Child Nutrition Act of 1966 established were important because it was possible that some students received all of their meals from school (United States Department of Agriculture, 2010a). The government recognized the need for proper nutrition among school-aged children, not only for healthy weight management, but also for proper brain development and learning ability. This act attempted to promote effective learning in schools by also promoting the consumption of healthy food.

Healthy, Hunger-Free Kids Act of 2010

In response to the increasing prevalence of childhood obesity, another act designed to improve child nutrition was called the Healthy, Hunger-Free Kids Act of 2010. This act was proposed by the Food and Nutrition Service of the United States Department of Agriculture and signed by President Obama into law in December of 2010 (The White House, 2010). It amended the Child Nutrition Act of 1966 by requiring that

the standards set forth by this act be consistent with the most up-to-date nutritional research as stated in the Dietary Guidelines for America. Similarly, it required the Secretary to consider any published scientific recommendations for the nutrition standards of the foods served in public schools. Furthermore, this act expanded on the National School Lunch Program, requiring these schools to supply free clean water to students in the designated time and place in which they purchase and eat meals. The changes prescribed by the Healthy, Hunger-Free Kids Act of 2010 were intended to improve the health and well-being of the children of the United States by increasing the consumption of healthful foods during the school day and creating an environment that reinforced the development of healthy eating habits (United States Department of Agriculture, 2010b).

Updates to the Nutrition Standards for the National School Lunch and School Breakfast Programs

As society gained a better understanding of the importance of fruits, vegetables, whole grains, and other nutritious foods, more improvements were made to the National School Lunch Program and School Breakfast Program. These updates to the school meal programs were largely based on recommendations from the Institute of Medicine of the National Academies. The Food and Nutrition Service of the United States Department of Agriculture ruled that, in order to be consistent with the most recent publications regarding the Dietary Guidelines for Americans, schools must offer more nutritious foods such as low-fat or fat-free milk, vegetables, whole grains, and fruits. It also became policy that schools had to decrease the amounts of sodium, saturated fat, and trans fats in the meals they served (Department of Agriculture, 2012). Additionally, these

improvements required schools to serve meals that met the nutritional needs of school children within their calorie requirements. These updates were “expected to enhance the diet and health of school children, and help mitigate the childhood obesity trend” (Department of Agriculture, 2012, p. 4088).

This national mandate that was recently established by the United States Department of Agriculture was intended to improve the nutritional content of meals served at public schools by requiring every lunch tray to have at least one fruit or vegetable on it. This was part of the USDA’s requirements for the National School Lunch Program (Department of Agriculture, 2012). The mandate explained that there are five food components: fruits, vegetables, grains, meats/meat alternatives, and fluid milk. Under this mandate, which was enacted in 2012, all students in the nation, in any grade level from kindergarten to twelfth grade, when purchasing lunch, were required to select at least three of the five food components. Additionally, one of the selections was required to be at least a half cup serving of the fruit or vegetable component or a half cup total serving of both fruit and vegetable. According to the United States Department of Agriculture (2014-2015), “Three food components are required for an adequate nutritious meal for students... Within each component, different choices may be offered, giving students many combinations for building a meal” (p. 10).

Strengths and limitations of these updates. While the government’s intention with these updates was to improve the nutrition of students and thus decrease the prevalence of childhood obesity, research has shown that the actual effects are questionable. Researchers wanted to determine the effectiveness of this new mandate in order to analyze the extent to which laws like this one help improve the nutritional intake

of students. To do so, they chose two school cafeterias and observed the students buying and eating lunch in them both before and after this mandate was enacted. Prior to 2012, researchers went to these two cafeterias a total of ten times and made note of what students put on their trays and what students ate. They then went back to these cafeterias eleven more times after the USDA enacted the mandate requiring students to have at least one fruit or vegetable serving on their tray. They randomly monitored students, observing what foods they took, what foods they ate, and what foods they threw away. After compiling and analyzing the results, they found that before the mandate, students selected an average of 0.69 cups of fruits and vegetables and that after the mandate, this average increased to 0.89 cups. However, before the mandate, students wasted an average of 0.25 cups of fruits and vegetables, and after the mandate, this average increased to 0.39 cups. Moreover, before the mandate, students consumed an average of 0.51 cups, and after the mandate, this average decreased to 0.45 cups (Amin, 2015).

These results have very interesting implications. Clearly, children are consuming fewer fruits and vegetables after the enactment of the mandate by the USDA, which is the exact opposite of its intended goal. Furthermore, students are wasting more fruits and vegetables, which is not benefitting their health and arguably hurting the environment. Although the new law decreased the percentage of school lunch trays that did not contain any fruits or vegetables from 15.7% to 2.5%, it also increased the percentage of students who did not eat what they had selected from 4% to 12% (Amin, 2015). In requiring students to take at least one fruit or vegetable, it makes sense, to some extent, that the amount of waste increased because some students will refuse to eat fruits and vegetables even if they are required to be on their trays (however, increasing the amount of waste by

35% seems like a rather large percentage). The challenging part is in understanding why consumption decreased by 12%—one would think requiring students to add fruits and vegetables to their lunches would cause their consumption of them to increase, or at least remain the same. It appears as though making fruits and vegetables a requirement causes students less willing to actually eat them for reasons that are still unknown.

This study demonstrates that this type of law has largely not been effective and has failed to bring about the desired results. Mandating healthy food selections, while seemingly promoting healthful eating habits, has actually decreased consumption of fruits and vegetables for students. It is clear that this strategy of health promotion is not effective, at least in the public school setting.

Smart Snacks in School Interim Final Rule

In 2013, the federal government once again amended the National School Lunch Program and School Breakfast Program regulations with its Smart Snacks in School interim final rule. Under these policies, the Food and Nutrition Service of the United States Department of Agriculture created new nutrition standards for all foods sold in schools—not just for the food items served for lunch and breakfast. This includes food sold in vending machines, snack bars, and a la carte lines. These updates were made by adding an amendment to the Healthy, Hunger-Free Kids Act, which required the United States Secretary of Agriculture to establish nutrition standards for these types of foods that were consistent with the most recent Dietary Guidelines for Americans (Department of Agriculture, 2013). Moreover, these changes directed the Secretary of Agriculture to consider new published scientific recommendations for these standards, emphasizing the need to update them as frequently as necessary. Once again, these amendments were

intended to emphasize not simply healthy meals but also healthy snacks, as school-aged children require frequent snacking throughout the day (CDC, 2014b).

Due to the Smart Snacks in School nutrition standards, the Centers for Disease Control and Prevention partnered with the Institute of Medicine in order to do a study which would help guide schools in improving the nutritional quality of the foods and beverages they sold. Recognizing the fact that school environments have the potential to reinforce or weaken behaviors that children learn at home from their parents, the two organizations together analyzed the latest scientific findings regarding nutrition and were able to make recommendations to local governments for laws to create regarding nutritional standards for foods and beverages sold outside of the federal reimbursable school meal programs (National Academies of Sciences, 2009). These recommendations “serve as the gold standard for the availability and content” of products allowed to be sold on school grounds (CDC, 2014b). This policy allows for constant updates to the standards set by the government as more knowledge is gained regarding the best nutrition for school-aged children.

Nutrition Standards Implemented by Individual Schools

In addition to the national nutritional laws mandated by the federal government, some individual school districts have decided to implement stronger standards for the foods allowed to be sold. The reasoning behind these more stringent measures is that while the standards for the National School Lunch Program and the School Breakfast Program ensure proper nutrition, most students have the ability to purchase other food items outside of these programs, such as the foods sold in vending machines, in a la carte lines, and in school stores. The only restrictions the federal government puts on these

food items is that they cannot be sold during meal periods where food is eaten or sold if they are determined to be of minimum nutritional value, which means that they have less than five percent of the recommended dietary allowance per serving for eight key nutrients (Bassler et al., 2013). Consequently, some districts across the country have implemented stronger standards for the food items that schools are allowed to sell anywhere on the grounds that apply across all grade levels and to a large variety of beverages and foods.

Marshall County Schools, Alabama. As part of its wellness policy, the Marshall County School District implemented stronger nutritional standards for all food and beverage items sold anywhere on school property at any time. Items that they deemed unfit to be sold included regular soft drinks, fruit-based drinks that consisted of less than 50% fruit juice, other sweetened drinks, sweetened teas, energy drinks, whole fat milk, candy, salty snacks that are not low in fat, and other snacks that are not low in fat. This district gradually began introducing these changes in 2007 in increments, allowing time for the tastes and perceptions of students to adjust to them. As one of their strategies for these new standards, Marshall County Schools did their best to give the students options from which they could choose by constantly rotating available items. They also monitored students' reactions to the foods they served to understand better which foods were appealing. In addition to implementing stricter standards for the items allowed to be sold, this district increased their nutritional education program to help students think about what effects the foods they eat have on their health (Bassler et al., 2013).

Strengths of these new policies. There are many strengths to the policies Marshall County Schools have implemented. With these new policies, the schools have experienced an increase in the amount of money spent on fruits and vegetables, implying that students are choosing these kinds of healthier items more frequently (Bassler et al., 2013). Perhaps this is due to the fact that these items are much more available or the fact that other items are no longer available, but getting students to eat healthier was the goal, and it appears as though they are achieving it. Moreover, incorporating an education element with these new policies has helped students understand the reasoning behind them. Because these students were equipped with better knowledge about how healthy eating habits can positively influence them both now and in the long term, they were more likely to adopt these practices willingly.

Limitations of these new policies. Although there were many strengths, there were also several important limitations to the stronger nutritional standards Marshall County Schools implemented. Initially, the schools struggled to find products that met their new standards, so options were very limited to students. Once vendors fully understood these new policies, however, they were able to work with the schools to offer more healthy food and beverage products and give students the options they desired. Another weakness of these new policies was that while they regulated the nutrition of the foods and beverages purchased during the school day, students still spent a majority of their time outside of schools, during which time the district could not regulate their food and beverage choices. In his document “Controlling Junk Food and the Bottom Line,” Bassler et al. (2013) writes, “Outside of school, many students are still eating less healthy

meals which creates a challenge when serving them healthier items during the school day.”

New London Public Schools, Connecticut. The public schools of New London, Connecticut are another example of a district that implemented stronger standards for the nutrition of the foods and beverages allowed to be sold. New London Public Schools began to introduce these changes in small stages in 2006, modifying their menus so that they would have fewer processed foods and instead replacing them for food that could be cooked at the schools. Furthermore, in the early stages, the schools switched out one slice of white bread on each sandwich for one slice of whole wheat bread, and within a year, they began serving sandwiches with only whole wheat bread. As in Marshall County Schools, New London Public Schools also banned many food and beverage items from being sold anywhere on school property. In addition to the list given above, New London Public Schools also judged regular sports drinks, including Gatorade and Powerade, to be too unhealthy to be sold to students. Another change these schools made was to introduce new vegetables to the school cafeterias in order to provide students with a wider variety of options (Bassler et al., 2013, p. 47).

In order to ensure these standards were being met and successfully implemented, the schools of New London, Connecticut formed a wellness committee. The members of the committee included the food service director, the superintendent, the principals, selected students, nurses, physical education teachers, several parents, and the local chapter of the American Red Cross Association. The group periodically checked on the foods being sold and offered throughout the schools. They were in charge of evaluating

whether their goals and objectives were being achieved and what could be done to continue to improve (Bassler et al., 2013).

Strengths of these new policies. There were many strengths to the policies the schools of New London, Connecticut enacted. First, the schools made some of its staff members available to the students during the lunch time so that they could listen to the students' reactions. This made it possible for the schools to evaluate the changes made to the foods served in the school cafeterias. Furthermore, this district encouraged its schools stores and extracurricular groups to think more creatively about other goods they could sell that would conform to the standards implemented. For example, its school stores began to focus more on selling school supplies instead of snacks, and extracurricular groups began to host car washes and flower sales instead of bake sales to meet their fundraising demands. Moreover, New London Public Schools performed taste testing for the students during which time they could try possible foods to be served and give their opinions of them. Additionally, as in Marshall County Schools, this district increased its nutritional education program so students could learn about the benefits associated with eating more healthful foods (Bassler et al., 2013). Although the students at first resisted the changes, as time went on, they gradually became accustomed to these new healthier food and beverage items and objected less frequently. When observing the immediate effects these policies had on the student population, it was observed that students were buying fewer a la carte items as the schools offered more choices and healthier choices on the lunch line (Bassler et al., 2013). Therefore, it appears as though the nutritional policies implemented in the New London School District, while met at first with resistance and difficulties, were slowly accepted by those whom it affected.

Limitations of these new policies. This Connecticut school district also experienced a range of limitations with its implementation of new policies regarding what foods and beverages schools were allowed to sell. At first, it was very difficult to find products that met the higher nutritional standards, and among those that did, it was even more difficult to find some that appealed to students. The schools in this district also had a very tight budget, which added another challenge to obtaining items that were affordable, nutritious, and appealing to students. Moreover, fresh fruits and vegetables require proper storage and refrigeration, and it was challenging for these schools to gauge the right amount to purchase that they could store and sell before the products spoiled. Furthermore, the students initially reacted negatively about many of the changes, complaining about and refusing to eat some of the more nutritious options (Bassler et al., 2013).

Miami-Dade county public schools, Florida. The public schools of Miami-Dade County also chose to employ stronger nutritional standards for the food and beverages it served. Over the course of five years, this school district implemented these new changes gradually in stages. They were inspired to do this after analyzing the local and national data on childhood obesity and felt they should do something to stop the trend from increasing. These schools also banned the aforementioned food and beverage items from being sold or served on their grounds.

Strengths of these new policies. While the Miami-Dade County School District encountered several barriers, they soon overcame these challenges by using many effective strategies to strengthen the effects of the policies. To help ensure that these standards were upheld as well as to suggest new policies to be adopted, a Food and

Nutrition Advisory Committee was established that included pediatricians, parents, the physical education director, the school health director, principals, and a nutrition coordinator. To assist the schools in transitioning to stronger nutritional standards, the district partnered with the Alliance for Healthier Generation. Another strategy this school district used was to solicit students' input on new food and beverages in order to make sure acceptable options were replacing items that were being removed.

Additionally, the Miami-Dade County Public Schools brought in new vending machines that contained fresh salads and wraps the students could purchase. In this way, instead of merely removing all foods regarded as unhealthy, the schools replaced them with healthier options so that the students still had choices. In time, these schools experienced many positive changes in the eating habits of their students (Bassler et al., 2013).

Limitations of these new policies. These schools faced several barriers during their implementation of the stronger nutritional standards for the foods and beverages allowed to be sold on school grounds. At first, the schools struggled financially since foods sold previously were cheaper in price and could be easily stored. Fresh foods spoil much more easily and quickly, and tend to be more expensive. It was therefore difficult to find products that met the nutritional standards, that were affordable, and that allowed the schools to make a profit. These schools also experienced a lot of resistance from parents and staff. As Bassler et al. (2013) writes:

Whether parents are simply not aware of food policies or disagree with the policies, at times parents act as barriers to improving the school food environment; they want to sell donuts or other less nutritious foods because they have been successful fundraisers in the past. (p. 56)

Similarly, some staff members opposed these changes not just for fundraising reasons but also for reasons of personal preference—if the foods and beverages they enjoy and have consumed for years are no longer allowed to be sold at the schools, they can no longer purchase these items during the school day.

Other states with strict nutritional laws. While the federal government has made numerous laws to improve the health of school-aged children in public schools by setting standards for the meals served, more than half of the states have passed laws with stricter criteria, hoping to reduce the prevalence of childhood obesity dramatically. These state laws, however, differ in stringency and particular criteria regarding levels of nutritional requirements for the products permitted to be sold (CDC, 2015b).

One study sought to discover whether stronger school meal nutrition standards actually do result in improved student weight status. To do so, the researchers observed 4,870 eighth-grade students in 40 different states and classified them as to whether the state in which they lived had standards that exceeded the United States Department of Agriculture's school meal standards. They found that in states that had stricter nutritional laws, the difference in obesity prevalence between students who received free meals and students who did not was 12.3 percentage points smaller compared with states that did not have stricter laws. Similarly, results suggested that the BMI of students in states exceeding USDA standards was 11 units smaller than states not exceeding those standards. Furthermore, the results gave little evidence that students bought more sugary and salty food and beverage products from other sources (Taber, Chiqui, Powell, & Chaloupka, 2013). Therefore, it can be concluded that, especially for those students who are eligible to receive free or reduced-price meals, strict nutritional laws that reflect the

most recent understandings of nutrition may improve weight status among those who buy their lunches at school.

Other research sought to discover the relationship between intake of healthful foods among students and the allowance of the sale of unhealthy foods in the schools they attended. Researchers found lower intakes of fruits, vegetables, and milk at lunch among students who attended schools that permitted the sale of foods with low nutrient density foods and sugar-sweetened beverages. These students also had lower daily intakes of fruits and vegetables and, interestingly, higher daily percentages of calories from total fat and saturated fat (CDC, 2015b). These results show that having stronger nutritional standards appear to have mostly positive effects on the student populations, encouraging them to consume more healthful foods.

Other effects of nutritional laws over time. The School Health Policies and Practices Study, put forth by the Centers for Disease Control and Prevention's Division of Adolescent and School Health, examined health trends in public schools over time in 2000, in 2006, and in 2012. They calculated the percentages of districts that required schools to prohibit offering foods or beverages that have low nutrient density and minimal amounts of vitamins and minerals (Table 1). The data in this table is taken directly from the School Health Policies and Practices Study. It clearly shows that the general trend is towards a higher percentage of schools banning the sale of food with little to no nutritional quality (CDC, 2012c). Similarly, the percentage of districts with contracts with food service providers that specifically addressed nutritional standards for a la carte items increased from 55.1% in 2006 to 73.5% in 2012.

Table 1. *Percentage of school districts that forbid junk food to be offered, by school setting, 2000, 2006, and 2012*

School Setting	2000	2006	2012
A la carte during breakfast or lunch periods	23.1	38.9	41.7
After-school or extended day programs	7.3	14.7	21.4
Concession stands	1.4	5.5	5.8
School stores, canteens, or snack bars	3.9	18.9	28.3
Vending machines	4.1	29.8	43.4

Moreover, many districts made a policy restricting the advertisement of soft drink products on school grounds, and the percentage of schools that allowed this advertising decreased from 46.6% in 2006 to 33.5% in 2012 (CDC, 2012c). These are all very positive trends that show the successes of various laws and policies restricting unhealthy foods and encouraging the purchase and consumption of healthier options.

The School Health Policies and Practices Survey also studied the nutrition services required in schools and the regulations on the school health environment. They found that in 2012, 14.8% of school districts required their schools to offer a self-serve salad bar and 26.5% recommended their schools to do so. Furthermore, 38.3% of districts had policies requiring their schools to prohibit advertisements for junk food or fast-food restaurants on their grounds and 27.6% recommended their schools do so. Additionally, 20.9% of districts had policies requiring their schools to have a newly-hired district food director who was certified, licensed, or endorsed by the state (CDC, 2012d).

These results also highlight some of the advances schools are making towards a healthier future for their students through positive nutritional laws and policies.

Conclusions

It is imperative to take the implications of these policies seriously. It seems clear that some nutritional laws have been effective in meeting their goals of improving the nutritional consumption of students in public schools. Sometimes, by restricting the sale of certain products with low nutrient density, or by restricting the advertisement of these products, the consumption of these foods will decrease. This can be seen in many of the results discussed above and gives promising effects for the future, as more and more states and districts are adopting stricter standards.

It is also important, however, to note the limitations of nutritional laws in promoting the health of youth. Some of these limitations can be seen in results discussed above when simply adopting new policy fails to produce the desired outcome. First, nutritional laws in public schools only affect students during school hours. These students still spend the majority of their time outside of school, where they can easily be exposed to unhealthy habits and products. Young people are very easily influenced by adults, so they can learn behavior from their parents or caretakers or other adults with whom they come into contact. Also, these laws only affect students who obtain food and beverages at school and who do not bring them from home or other outside sources. Moreover, oftentimes the requirement to do something without an explanation as to why it should be done can make the requirement very unappealing and even cause resentment.

Therefore, after a review of many of the nutritional laws and policies implemented throughout the years, and an analysis of their strengths and limitations, it

can be concluded that policies, while vastly important, need to be constantly evaluated.

There are always going to be strengths and limitations to any new policy instituted, and being able to learn from them will allow more effective new policies and updates to be made.

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