Review of Policies Implemented by Levels of Government to Curb Childhood Obesity: Strategies to improve future policies

By

Christopher Todd

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Abstract

Childhood obesity prevalence rates have reached epidemic levels in the United States having nearly tripled over the last thirty years (Prevention, 2012a). Increasing numbers of children are leading sedentary lifestyles. The causes of the pediatric obesity epidemic include factors that increase caloric consumption and those that lead to increasing sedentary behavior. Consumption of sugar-sweetened beverages has increased in tandem with the prevalence of pediatric obesity in the United States indicating a correlation. Data collected from two randomized controlled studies have shown that reducing children’s intake of sugary drinks leads to a reduction in weight gain and fat accumulation (Wilson, 2012). In addition, the marketing of high-caloric foods specifically targeted to children has been seen as a catalyst for childhood obesity and junk food (i.e. low-nutrition, energy-dense foods and beverages) intake (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007). Moreover, 94% of schools fail to provide lunches to students that meet USDA standards for healthy meals (Briefel, Wilson, & Gleason, 2009).

In an effort to curb the rapid increase in obesity throughout the United States, federal, state and local governments have begun to implement policies to help protect children. In December 2011, San Francisco implemented a policy to ban fast-food restaurants from providing toys in children’s meals that do not meet government nutrition guidelines (Bernstein, 2010). New York City banned supersized sugar-sweetened beverages from being sold by city restaurants,
delis, sports facilities, and street vendors (Grynbaum, 2012). Howard County in Baltimore recently banned the distribution of sugary drinks on county property (Lavoie, 2012). Maine further extended federal restrictions on minimally nutritious foods at all high schools (Whatley Blum et al., 2011). On the federal level, the United States Congress reduced the standards for school lunches a year after strict guidelines were instituted ("Healthy Hunger Free Kids Act," 2010). While these policies have been enacted recently and no formal evaluations have been published, they each lack several components of an effective governmental response.

This paper proposes that future plans by governments should include, school-based interventions, taxation on high-caloric foods, restructuring of school lunches, elimination of high-caloric beverages from school campuses, and restrictions on marketing to children. Similar methods have been recommended by the World Health Organization (WHO) and have been successful as population-based approaches for other health crises (Organization, 2012).
Introduction to Obesity Epidemic

The United States has seen a dramatic increase in the number of people that are either overweight or obese. More than one-third of the adult population is considered overweight while another one-third is obese (Prevention, 2012a). In fact, the WHO has estimated that nearly 80% of adult men and 77% of adult women in the U.S. are overweight (Organization, 2013). The medical and public health community have defined the terms “overweight” and “obese” using the Body Mass Index (BMI). BMI is calculated by using the formula mass (lb) / (height (in))^2 x 703 (Organization, 2013). Table 1 provides the BMI ranges for underweight, healthy, overweight, obese and morbidly obese individuals.

Table 1: Body Mass Index ranges for various weight statuses

<table>
<thead>
<tr>
<th>Weight Status</th>
<th>BMI Lower Range</th>
<th>BMI Upper Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>N/A</td>
<td>&lt;18.5</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5</td>
<td>&lt;25</td>
</tr>
<tr>
<td>Overweight</td>
<td>25</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Obese</td>
<td>30</td>
<td>&lt;40</td>
</tr>
<tr>
<td>Morbidly Obese</td>
<td>40</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Sadly, this problem is not exclusive to adults. While the obesity prevalence rates have nearly doubled since 1976 for U.S. adults, the rates have tripled for children during that same timespan (Prevention, 2012a). The weight status of a child is determined using a slightly more complicated method that includes age- and sex-specific percentiles rather than the ranges discussed in Table 1.
(Prevention, 2012a). Overweight children are defined as having a BMI between the 85th and 95th percentile and obese children are defined as having a BMI greater than or equal to the 95th percentile (Prevention, 2012a). One of the key problems with BMI measurements for children is that a child is considered overweight or obese when compared against all children. This could allow more children to be considered normal that really are overweight as the average weight increases for children nationally. The CDC has estimated that between 1976 and 2008 obesity increased from 6.5% to 19.6% among 6- to 11-year olds (Figure 1). By age 4, 18.4% of all children are obese (Wojcicki & Heyman, 2012). Numerous studies have shown that overweight and obese children are much more likely to become overweight and obese as adults. Approximately half of overweight adults were overweight as children, and nearly two-thirds of children that were in the upper 25% of the BMI range were also that obese as adults (Biro & Wien, 2010). Some researchers have projected that if the obesity epidemic remains unchecked, America will see the first generation of children that will have a shorter life expectancy than their parents (Stewart, Cutler, & Rosen, 2009).
In conjunction with decreasing life expectancy rates, healthcare costs have skyrocketed due in large part to the sizeable overweight and obese populations in the United States (Sturm, 2002). Obesity accounts for over $150 billion dollars of annual health care spending in the United States (Landers, 2013) and roughly 10% of all medical spending can be attributed to obesity and associated medical conditions (Finkelstein, Trogdon, Cohen, & Dietz, 2009). Heart disease and lack of physical activity are two of the top killers of people throughout the United States. Roughly 25% of both men and women died in 2008 as a result of heart disease and another 3% as a result of diabetes (Prevention,
Clearly, advancements such as vaccinations, public health services, and cancer treatments have been made in both medicine and public health over the past one hundred years and these have led to a decrease in prevalence of other types of deaths. However, even with this progress, obesity prevalence rates have increased exponentially.

Similarly to smoking, obesity on its own does not kill a person. An overweight or obese individual develops secondary conditions as a result of their eating habits and lack of exercise. Obesity often leads to heart disease, Type 2 Diabetes, stroke, and various types of cancer (Prevention, 2012a). Reuters reported in April of 2012 that obesity contributed more to healthcare costs for the American people than cigarette smoking (Begley, 2012). In fact, obesity is associated with a 36 percent increase in inpatient and outpatient spending while smoking is only linked to a 21 percent increase in similar spending (Sturm, 2002). Obese men account for an additional $1,152 a year while obese women account for $3,613 a year more in healthcare costs than a person of normal weight (Cawley & Meyerhoefer, 2012). Primary contributing factors to rising healthcare costs are the morbidity effects of obesity such as arthritis, asthma, sleep apnea, and other respiratory illnesses. Morbidity-related costs also include the value of income lost from decreased productivity, restricted activity, absenteeism, and bed days, which lead to a struggling economy because of the shrinking healthy workforce (Prevention, 2012a).
Causes of Pediatric Obesity

As mentioned earlier, childhood obesity is becoming an even greater issue as its prevalence is rapidly outpacing the increase in adult obesity. The explanation for the increase in obesity is simple; children are obese as a result of consuming too much energy without adequately burning it off (Carlson, Crespo, Sallis, Patterson, & Elder, 2012). Several factors are at the root of this energy imbalance – increase in sedentary lifestyle, skipping breakfast and increased consumption of sugar-sweetened beverages (SSBs) (Liu et al., 2012). Since the 1980s, children have been more exposed to video games, marketing of junk food through television advertising, and larger varieties of SSBs. Many of these factors have contributed to the energy imbalance in children. Longitudinal studies have confirmed that this trend is reversible – increased physical activity, eating breakfast, and a decrease in consumption of SSBs can lead to a decrease in percent body fat (Liu et al., 2012).

Sedentary Lifestyles

Over the past 30 years, children’s access to television has increased with a myriad of channels devoted solely to children’s programming. Even worse, it is estimated that at least half of children in the United States have a television in their bedroom with some studies estimating that figure to be closer to 70% (Parker-Pope, 2008). Studies have shown that the presence of a television in children’s bedrooms increased the average viewing time from 21 hours per week to 30 hours per week (Parker-Pope, 2008). With children spending such a large
amount of time watching television, they spend less time playing outside burning calories. Instead, they are exposed to a barrage of television advertisements for sugar-sweetened foods specifically targeted to children. The Institute of Medicine (IOM) issued a statement in 2005 that such television advertisements directed to children need to be limited. In addition to the predatory marketing of high-caloric foods to children, less sleep due to excessive television viewing has also been shown to be a contributing factor to obesity (Chen, Beydoun, & Wang, 2008). In addition, access to Physical Education, recess and other opportunities for play have decreased as well as schools have begun to cut funding and focus more on academic achievement (Guinhouya, 2012).

**Sugar-sweetened Beverages**

While sedentary lifestyles are partially responsible, SSBs are seen as one of the key contributing factors for the increase in childhood obesity, because they are the leading source of added sugar in diets (Berkey, Rockett, Field, Gillman, & Colditz, 2004). More than 300 calories per day come from SSBs for overweight and obese individuals (Ebbeling et al., 2012). Adolescent boys consume an average of 357 kcal per day of SSBs – higher than the average adult and approximately 17% of their allotted daily caloric value (Caprio, 2012). Moreover, the effects of adiposity from increased SSB intake are even greater in those children that are genetically predisposed to being obese (Qi et al., 2012).

SSBs are seen as such a serious problem because they do not lead to a sense of satiety since there is no fiber to provide the body with that feeling of
being full. In turn, an increase in intake of SSBs for the average child does not lead to a decrease in other high-caloric foods thus leading to an overall increase in daily caloric intake and overall weight gain (de Ruyter, Olthof, Seidell, & Katan, 2012).

Soda comprises roughly one-third of the gram weight consumption of beverages by children, which is more than any other beverage (Taber et al., 2011). However, they are not the only beverage option laden with sugar. Sports energy drinks such as Gatorade, PowerAde, and Vitamin Water, along 100% fruit juice products, have sugar levels equivalent to, and often times exceeding, regular sodas. Table 2 illustrates the high levels of sugar in many common products. Similarly, fruit juice holds little nutritional value because all of the fiber has been removed from the fruit, leaving only the sugar-filled juice remains (de Ruyter, Olthof, Kuijper, & Katan, 2012).
Table 2: Grams of sugar per 12 oz. of Popular Sugar-sweetened Beverages (data collected from manufacturer’s website and nutrition labels)

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Sugar (g) per 12 oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gatorade</td>
<td>21</td>
</tr>
<tr>
<td>Gatorade G2</td>
<td>7</td>
</tr>
<tr>
<td>Vitamin Water</td>
<td>19</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>39</td>
</tr>
<tr>
<td>Red Bull</td>
<td>39</td>
</tr>
<tr>
<td>Tropicana Orange Juice</td>
<td>33</td>
</tr>
<tr>
<td>Mott’s Apple Juice</td>
<td>42</td>
</tr>
<tr>
<td>Welch’s Grape Juice</td>
<td>57</td>
</tr>
</tbody>
</table>

Realizing the burden that obesity has placed on the healthcare system, many countries and their respective leaders from across the world have taken action to counteract these rising healthcare costs through policy and/or various law changes. This paper summarizes several actions taken by federal, state, and local government entities in the U.S., critiques their approach, offers proposals on ways to improve their impact, and introduces new strategies to combat obesity.

Research Methods

In January and February 2013, a search using Google News Search Engine and PubMed located articles discussing policies implemented to combat childhood obesity within the previous five years. Since the issue of childhood obesity began to garner national attention roughly five years ago, articles
published during and after 2007 received priority. Search criteria included “childhood obesity” AND “local policies” OR “government policies” AND “sugary beverages” AND “intervention policies” OR “federal policies”. The search concluded with three local policies, one state policy and one national policy. In addition, a literature review using Google Scholar and PubMed found articles focusing on the impact sugar-sweetened beverages have on the obesity epidemic, the role of schools in not only contributing to the epidemic but also in intervention strategies, and other causes of childhood obesity. Separate searches within PubMed located successful intervention strategies used in the past and assessments of how these strategies could be applied to childhood obesity prevention. The Centers for Disease Control and Prevention’s (CDC) website provided prevalence trends and data on the epidemic in the United States. The IOM and WHO have published extensively on the epidemic and their research contributed often throughout this paper. In addition, materials from courses taken during the Master’s Program have been used throughout this paper. In particular, Deborah Stone’s Policy Paradox, articles relating to social justice from PUBH 735 “Policy Development” and leadership-related material from PUBH 791 “Core Principles of Leadership.”

Government Action

The IOM issued a report in 2007 titled Progress in Preventing Childhood Obesity: How do we measure up? This report states “government provides leadership, which it demonstrates by making the response to the obesity
The report stressed that the government’s response to the epidemic must involve political commitment, policy development, prioritized funding and coordination of programs (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007). Strong political commitment from the government must include prioritizing the topic of childhood obesity on the national agenda and is seen as a matter of high national importance. According to this report, funds must continue to be allocated at the state and federal level to fight this issue. Policy development provides not only a plan for government programs to follow, but also proves to the American people that its leaders take the issue seriously and recognize obesity as a serious threat to the overall health of the country. The five polices addressed below take the initiative to develop policy, but Congress has demonstrated little political commitment at the federal level. In addition, an overall lack of coordination between governmental agencies and various programs and a strong need for funding are critical. The remainder of this paper focuses on the policy development aspect of five specific government responses and their overall effectiveness at reducing childhood obesity.
Federal Government and School Lunches

In the United States, over 100,000 public schools participate in the National School Lunch Program that provides free or low-cost meals to children that otherwise could not afford to eat lunch (Service, 2012). However, the lunches that are being provided to children in public schools fail to meet federal nutrition guidelines. A USDA Study showed that 94% of schools that served lunch failed to meet USDA standards for healthy school meals – the meals are exceeding the recommendations in total fat, saturated fat and sodium (Service, 2012). The problem does not end with school lunches – many children throughout the country have access to a number of competitive food choices through vending machines placed on school campuses. Competitive foods are those offered at schools that are not a part of the meals included in the USDA’s school meals program (Fox, Meinen, Pesik, Landis, & Remington, 2005). Schools allow the vending machines to be placed on their campuses because they provide a fundraising opportunity for the schools. These monies typically fund programs that do not receive strong support from the state, such as the arts and athletics. The vending industry estimated that approximately 2% of all vending sales ($1 billion out $45.6 billion) in the US came from primary and secondary schools ("Census of the Industry," 2009).

Table 3 below shows the percentage of schools in which students could purchase various items from a vending machine. The School Health Policies and Programs Study conducted in 2006 separated the data by school level and
revealed that students are subjected to a larger percentage of high-caloric foods the further they progress through their education. Ironically, this trend is inversely proportional to the percentage of schools offering Physical Education as a requirement (Kann, Brener, & Wechsler, 2007). A recent study showed that increased availability of junk food in schools is responsible for the rise in BMI in teens (Kubik, Lytle, & Story, 2005). Table 3 illustrates the number of unhealthy choices that high school children face compared to elementary and middle school students.
Table 3: Percentage of Schools in Which Student Could Purchase Items from Vending Machines (*Table courtesy of School Health Policies and Programs Study, 2006*)

<table>
<thead>
<tr>
<th>Food or Beverage</th>
<th>Elementary</th>
<th>Middle</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Healthy</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1% or skim milk</td>
<td>4.2</td>
<td>12.9</td>
<td>20.2</td>
</tr>
<tr>
<td>Bottled water</td>
<td>21.9</td>
<td>63.2</td>
<td>85.8</td>
</tr>
<tr>
<td>Fruits or vegetables</td>
<td>4.2</td>
<td>8.7</td>
<td>17.9</td>
</tr>
<tr>
<td><em>Medium</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salty snacks that are low in fat (e.g., pretzels, baked chips, or other low-fat chips)</td>
<td>11.3</td>
<td>30.9</td>
<td>58.0</td>
</tr>
<tr>
<td>Low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods</td>
<td>9.7</td>
<td>25.5</td>
<td>49.3</td>
</tr>
<tr>
<td><em>Unhealthy</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2% or whole milk</td>
<td>7.1</td>
<td>15.4</td>
<td>30.6</td>
</tr>
<tr>
<td>100% fruit juice</td>
<td>16.8</td>
<td>41.1</td>
<td>64.7</td>
</tr>
<tr>
<td>Chocolate candy</td>
<td>8.7</td>
<td>24.7</td>
<td>49.6</td>
</tr>
<tr>
<td>Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat</td>
<td>12.0</td>
<td>27.6</td>
<td>58.3</td>
</tr>
<tr>
<td>Other kinds of candy (non-chocolate)</td>
<td>10.8</td>
<td>26.2</td>
<td>54.2</td>
</tr>
<tr>
<td>Ice cream or frozen yogurt that is not low in fat</td>
<td>7.0</td>
<td>11.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Salty snacks that are not low in fat (e.g., regular potato chips or cheese puffs)</td>
<td>11.6</td>
<td>30.4</td>
<td>61.4</td>
</tr>
<tr>
<td>Soda pop or fruit drinks that are not 100% juice</td>
<td>16.4</td>
<td>45.0</td>
<td>76.8</td>
</tr>
<tr>
<td>Sports drinks (e.g., Gatorade)</td>
<td>12.4</td>
<td>51.7</td>
<td>75.0</td>
</tr>
</tbody>
</table>

In an attempt to reduce total fat, saturated fat and sodium in Lunch Program lunches, Congress passed the Healthy Hunger-Free Kids Act on December 2, 2010. However, evidence supporting low-fat diets is weak and
policies may be more effective by reducing total caloric intake. The act instructed the USDA to develop higher nutrition standards that are based on the IOM’s recommendations from a report issued in 2005. The initial version of the Healthy Hunger-Free Kids Act accomplished the following: doubled the amount of fruit served during breakfast in public schools; increased the quantity of vegetables in lunches and required servings of dark green and orange varieties; allowed potatoes (including French fries) to be served as a vegetable but limited its use to once or twice per week; immediately required that 50% of grains served be whole grains, increasing to 100% after two years; reduced sodium in lunches by 53% over the course of 10 years; reduced saturated fat to less than 10% of all the calories served in a week; and required that chocolate milk be fat free. Sugary beverages were not specifically targeted as they primarily fall under the category of competitive foods. Competitive foods are already restricted for schools participating in the National School Lunch Program.

However, in November 2011, Congress altered the bill by allowing fries to be served all five days of the week, delayed the increase in whole grains, and granted tomato paste the distinction of being classified as a vegetable ("Healthy Hunger Free Kids Act," 2010). Congress faced strong pressure from potato farmers and corporate lobbyists and ultimately a change of majority in the House of Representatives and a lack of political commitment to the issue led to the reversal of some of its components. While the final outcome of the Healthy Hunger-Free Kids Act did result in the rescinding of some nutritional requirements, the federal government did make strides in policy development to
fight childhood obesity. The strengths and weaknesses of the Healthy Hunger-Free Kids Act relative to the IOM components of an effective government response are summarized in Table 4. More coordination between the USDA, IOM and elected officials may have led to a more comprehensive solution to the issue of poor quality school lunches. Proponents of the original bill may also have benefited from the formation of a coalition between the Medical and Consumer Interest Groups. Coalitions have been effective in the past by combining both personnel and material resources to effect policy change and promote an idea (Butterfoss, Goodman, & Wandersman, 1993).
Table 4: Summary of IOM Components of an Effective Government Response in the Federal Healthy Hungry-Free Kids Act.

<table>
<thead>
<tr>
<th>Components for Effective Response</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Commitment</td>
<td>• Demonstrated lack of political commitment by the US Congress in reversal of policy</td>
</tr>
<tr>
<td>Policy Development</td>
<td>• Policy development was strong as it greatly strengthened nutritional requirements over previous standards</td>
</tr>
<tr>
<td>Prioritized Funding</td>
<td>• Allocated nearly 4.5 billion dollars for the stricter guidelines</td>
</tr>
</tbody>
</table>
| Coordination Between Programs     | • Congress ignored the guidance of the USDA, IOM and other health-based governmental programs  
• Lack of coalition between Medical and Consumer Interest Groups which may have strengthened their position |

State Government and Maine Policy on Nutritional Food for High School Students

Schools that participate in the National School Lunch Program (which are funded by the USDA and thus fall under the jurisdiction of the Healthy Hunger-Free Kids Act) are required to meet certain nutritional standards for products that are sold outside of the school lunch program (Whatley Blum et al., 2011). Foods that are sold in direct competition with federal meals (competitive foods) and are considered “foods of minimal nutritional value” (FMNV) are prohibited from being sold during breakfast and lunch. This restriction only applies to those FMNV that are sold within the cafeteria and not vending machines or other areas on school campuses (Whatley Blum et al., 2011). The State of Maine extended the restrictions on FMNV by not allowing them before, during or after school at any
location on school grounds. However, the statewide policy did allow for local school districts to ease the restrictions and make exceptions.

Studies further showed that the overall impact of Maine’s policy was reduced because the majority of schools allowed exceptions for FMNV (Whatley Blum et al., 2011). In addition, the impact of the policy was limited because the definition of FMNV is weak and in need of strengthening. Table 5 summarizes Maine’s policy to further fight childhood obesity and details its inclusion/exclusion of the four main components for an effective government response.
Table 5: Summary of IOM Components of an Effective Government Response for the State of Maine Nutrition Policies.

<table>
<thead>
<tr>
<th>Components for Effective Response</th>
<th>Summary of Action</th>
</tr>
</thead>
</table>
| Political Commitment              | • Took initiative to combat childhood obesity  
                                    • Exceeded federal requirements |
| Policy Development                | • Policy specifically target obesity and poor food quality  
                                    • Policy allowed for exceptions at the local level |
| Prioritized Funding               | • Little funding allocated at state and local level  
                                    • Bans implemented due to cost-effectiveness |
| Coordination Between Programs     | • IOM recommends that local governments work with state government and agencies to develop policies – not allow local governments to deviate and loosen restrictions set at state level |

*Three Local Policies Targeting Childhood Obesity*

The New York City Board of Health banned the sale of sugary beverages (greater than 16 fl. oz.) at restaurants, street carts and movie theaters in 2012. The policy defined a sugary beverage as i) non-alcoholic, ii) sweetened by the manufacturer or establishment with sugar or another caloric sweetener, iii) has greater than 25 calories per 8 fluid ounces and iv) does not contain more that 50 percent milk ("New York City Health Code," 2012). The ban only impacted food service establishments that received health inspections from the city’s health department and had no jurisdiction over statewide chains such as convenience stores, grocery stores and drug stores that are regulated by the state (Kessler, 2013). In March of 2013, a New York State Supreme Court Justice overturned the policy just one day prior to it going into effect (Grynbaum, 2013). Judge Tillings stated that the policy was “arbitrary and capricious” and that the Board of
Health that passed the measure had exceeded its own power. The judge felt that the City Council was the only legislative body with the legal authority to issue this policy (Grynbaum, 2013). In addition, the judge cited that the law would be enforced unevenly because of the numerous loopholes mentioned in Table 6.

In November 2010, the San Francisco Board of Supervisors voted to ban most of McDonald’s free toys in their Happy Meals because they do not meet certain nutrition guidelines (Bernstein, 2010). In particular, any meal that surpasses set levels of sugar, fat and calories cannot offer a free toy as a part of the meal. The ban does allow for toys to be present in the happy meal if the food and drink combined total less than 600 calories and less than 35% of the calories come from fat (Bernstein, 2010). Santa Clara proposed a similar ban in September 2010. In response, McDonald’s has elected to charge an additional 10 cents to those consumers who wanted the toy. The extra 10 cents is to be donated to McDonald’s charity, the Ronald McDonald House of San Francisco (Strom, 2011).

Ken Ulman, Executive of Howard County in Baltimore, Maryland issued an Executive Order in December 2012 that banned the distribution of sugary drinks on Howard County Government property (Lavoie, 2012). Consumers are still able to purchase whatever sugary beverage they want from supermarkets and restaurants, but only healthy choices will be available on government property. The order limits the number of calories per serving for soft drinks, artificially sweetened drinks, milk and milk substitutes and fruit and vegetable-based drinks
(Lavoie, 2012). However, Howard County Schools are exempt from the ban because Howard County Schools had already prohibited the sale of sodas in elementary school and limited them in middle schools. As required in the school regulation, high school vending machines must not contain more than 50% sodas (Lavoie, 2012).

Although the bans implemented by these three local governments have good intentions, they lack several of the components for a comprehensive governmental response. Bans have typically seen as an attack on an individual’s personal freedom rather than as a means to protect their health. The primary flaw in all three of these policies is that there are simply too many loopholes that allow people to circumvent the bans (Table 6).

Table 6: Summary of Loopholes and Exemptions in Local Government Policies Targeting Childhood Obesity

<table>
<thead>
<tr>
<th>Policy</th>
<th>Loopholes and Exemptions</th>
</tr>
</thead>
</table>
| NYC Oversized Sugary Drink Ban | • No effect on grocery stores and convenience stores where sodas are purchased most frequently  
                                 | • Does not prevent someone from purchasing multiple 16 oz. beverages in lieu of one super-sized one  
                                 | • Exemptions for milk-containing coffee beverages and milkshakes  
                                 | • Statewide chains exempt from ban |
| SF Happy Meal Toy Ban          | • Consumers can still purchase a toy for an additional 10 cents  
                                 | • Companies can continue to market the high-caloric food to children |
| Howard County Drink Ban        | • Does not impact the sale of high caloric drinks in Howard County High Schools |
The bans on sugary drinks and happy meal toys showed some political commitment, but the numerous aforementioned loopholes have contributed to a lot of criticism. In addition, the bans required little to no prioritized funding and demonstrated little cooperation among government programs as the Health Boards and County Executives passed the measures on their own without cooperation from other agencies at the state and local level. Table 7 provides a summary of the components the WHO identified for an effective governmental response, and how they were utilized in the local policies.

Table 7: Summary of IOM Components of an Effective Government Response for Local Policies Combatting Childhood Obesity.

<table>
<thead>
<tr>
<th>Components for Effective Response</th>
<th>Summary of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Commitment</td>
<td>• Took initiative to combat childhood obesity</td>
</tr>
<tr>
<td></td>
<td>• Made it an important issue</td>
</tr>
<tr>
<td>Policy Development</td>
<td>• Although policies were implemented at local level, more could have been accomplished with state level intervention</td>
</tr>
<tr>
<td>Prioritized Funding</td>
<td>• Little funding allocated at local level</td>
</tr>
<tr>
<td></td>
<td>• Bans implemented due to low costs/expenditures</td>
</tr>
<tr>
<td>Coordination Between Programs</td>
<td>• Lacked coordination between local government and the state level</td>
</tr>
<tr>
<td></td>
<td>• IOM recommends that local governments work with state government and agencies</td>
</tr>
</tbody>
</table>

**Policy Improvement Strategies**

The local and state policies mentioned above approached the obesity epidemic differently than the federal government – they took action by banning certain products from being sold to the public while the federal government
tightened regulations specifying the minimal Lunch Program nutrition standards for states to follow, only to subsequently loosen them. The local governments’ power was limited because the funding at their disposal was not enough to make a sizeable impact on the epidemic. Instead, these entities took the stance of developing policies that outright banned products because it was cheaper to implement than robust intervention programs and gave the impression that they were committed to the issue of obesity prevention. All three of the local policies lacked involvement at the state level where they could have benefited from pooling of resources and leadership. In order to be more effective, the IOM recommends that state and local governments coordinate leadership efforts and provide support for childhood obesity prevention programs, particularly in high-risk populations (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007). In addition, the WHO calls for an increase in resources and funding for programs promoting healthy diets, lifestyles and exercise (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007). The necessary commitment and leadership from the federal and state government will require the allocation of increased resources to support surveillance and monitoring, innovative interventions, and program evaluation (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007)

Another flaw in the local and state policies is that the public sees them as “Nanny State” laws that dictate what people can and cannot do and limit individual freedoms. A poll conducted by the New York Times in August 2012
showed that 60% of New Yorkers disapproved of the city’s actions (Grynbaum, 2013). Critics, such as the organization New Yorkers for Beverage Choices, view consuming unhealthy foods and beverages as their right and not something that should be dictated by any level of government. Yet, restricting individual liberties is often times critical in preserving a community or population of people that are used to doing what they want (Stone, 2012). Stone stresses that the potential harm to others is primarily the single factor by which restricting individual freedoms is justified (Stone, 2012). In the case of childhood obesity, the freedom to consume high-caloric foods and beverages has led to increased healthcare costs for the entire population.

Social justice is often seen as the principle that guides many of the aforementioned policies. Gostin and Powers state that there are two aspects of social justice – health improvement for the population and fair outlooks for the disadvantaged – that particularly apply to public health (Gostin & Powers, 2006). Since childhood obesity affects minority and socio-economically disadvantaged populations the most, advocates for social justice believe the government has a responsibility to diminish the margin between the “haves” and “have not’s.” Skeptics of this idea of social justice argue that health is an individual’s concern and should not be dictated by the government. However, health crises such as childhood obesity affect everyone in the United States. As more children are categorized as overweight and obese, fewer children will be able to enlist in the military, pass a physical to play sports, perform manual labor and earn a living.
All of these limitations are crippling to a country but the most detrimental is the steep rise in health care costs that eventually affect everyone. With rising healthcare costs, insurance premiums increase for all individuals, Medicare and Medicaid costs skyrocket, and Americans are left with the bill. Government intervention is beneficial by providing a framework for agencies to develop and execute a plan for obesity reduction.

*Educational Components and Public Service Campaigns*

The policies implemented by New York City, San Francisco, Howard County, and Maine all lacked a community wide campaign that includes mass media messages and multi-component strategies that involve a range of community partners that could be used to stress the importance of healthy diets.

Research has shown that well-designed, well-implemented educational-based school interventions, such as nutrition and physical activity education in combination with allotting additional time to physical activity during the school day, an effectively promote physical activity, healthy eating, and reductions in television viewing time (Saguil & Stephens, 2012). However, the CDC and the Guide to Community Preventive Services have found that there is not sufficient evidence to recommend or reject standalone educational interventions targeted at reducing obesity (Force, 2011). Educational interventions often need to be conducted in conjunction with other intervention strategies that include physical activity (Force, 2011). Physical activity may include noncompetitive sports, as
well as reducing sedentary activities, especially television viewing (Katz et al., 2005).

The Eat Well and Keep Moving campaign was launched in 1995 in 6 public Baltimore elementary schools with an additional 8 schools serving as controls. Participating schools received educational materials that were developed as a low-cost and sustainable intervention to improve diet and physical activity habits of students. The intervention targeted 4th and 5th grade students over a two-year period. The program utilized a social marketing campaign that emphasized multiple channels of communication and feedback from focus groups consisting parents, teachers, students and administrators. The classroom-based interventions were administered by the teachers by incorporating the material into their normal course of study, including links to the school food service, physical education, wellness programs, and classroom-based campaigns (Gortmaker et al., 1999). While the changes in eating and physical activity behavior were modest for the study participants, the Guide to Community Preventive Services deemed that it was a recommended model for future intervention strategies targeted at reducing childhood obesity (Force, 2011).

Instead of banning high-caloric commodities, the WHO, CDC and IOM and other agencies propose strengthening the public’s knowledge about those items and the particular danger they pose to their health. The IOM recommends that Public health agencies be given funding at the state and federal level to launch
public service campaigns targeted to parents to help educate them about the
dangers of high-caloric foods and beverages (Koplan & Institute of Medicine
Similarly, the IOM recommended to Congress in 2007 that the US Department of
Health and Human Services “should develop, implement, and evaluate a long-
term national multimedia and public relations campaign focused on obesity
prevention in children and youth” (Koplan & Institute of Medicine (U.S.).
Committee on Progress in Preventing Childhood Obesity., 2007). Given the
amount of television that children watch during the day, pro-health and pro-
nutrition commercials targeted to children have been shown as a more effective
and efficient method of combatting obesity than school-based health promotion
(Cecchini et al., 2010).

*High-caloric Food Tax*

Pigovian taxes are taxes that may be placed on goods that generate
negative outcomes where the social costs (healthcare and morbidity costs)
outweigh the income from the sale of those goods (Sandmo, 1975). The
introduction of a Pigovian tax for junk food and high-caloric items would serve as
a deterrent to purchasing these high-caloric options without impeding on a
consumer’s right to eat and drink whatever he/she wants. The rationale for the
tax is that the increased cost of purchasing the taxed goods will cause the overall
consumption of those items to decrease and the negative externality to decrease
(Sandmo, 1975).
Similar taxing structures have been used in many states for the purchase of cigarettes and have proven to be effective (Brownell & Frieden, 2009). A study conducted by Yale University demonstrated that for every 10% increase in price, consumption of sugary beverages decreased 7.8% (Brownell & Frieden, 2009). By increasing the price of sugary drinks and foods, fruits and vegetables will become more competitive. Figure 2 shows the rapid increase in fresh fruits and vegetables in comparison to the Consumer Price Index, carbonated beverages and sweet foods. The high cost of produce in relation to junk food has been seen as one of the primary reasons for obesity.

Figure 2. Relative Price Changes for Fresh Fruits and Vegetables, Sugars and Sweets, and Carbonated Drinks, 1978–2009. (Figure courtesy of (Brownell & Frieden, 2009)).

While many critics of such a policy argue that it serves as a regressive tax – unfairly targeting the poor – many states set that additional money aside to
help support programs aimed at helping people quit smoking. The same type of strategy could be used for high-caloric foods. Studies have shown that this taxing structure has worked in reducing smoking rates – a reduction of up to 5% in cigarette consumption has been seen as a result of a 10% increase in the price of cigarettes (Prevention, 2012b) (Chaloupka IV, Peck, Tauras, Xu, & Yurekli, 2010). The WHO reported that there is strong evidence that the price of products greatly affects the consumption of food, cigarettes and alcohol (Organization, 2012).

School Lunches and Campus Vending Machines

Low-income and minority children are more likely to be obese and qualify for the Federal Lunch Program (Briefel et al., 2009). Thus, paramount that these high-risk children are provided healthier school lunches or they will become obese quicker due to the poor nutritional value of current school lunches, and in turn, contribute to the rising health care costs crippling the United States. In an effort to combat this issue, the United States Congress should pass the original version of the Healthy Hunger-Free Kids Act that was proposed in December 2010. This bill would tighten the restrictions on the use of potatoes as a vegetable, increase the percentage of whole grains used in school lunches, and retract the idea that tomato paste (for pizza) is a vegetable. In order to get the original bill to pass in Congress, it will require coordinated efforts between the medical and consumer communities. Coalitions have the ability to create widespread public support for issues by combining resources and expertise to
spread a message effectively. Through continued use of the media, such a coalition would stress the importance of the issue to Congress and ultimately result in support for the bill.

Children are exposed to more unhealthy options throughout the school day due to the presence of vending machines on school campuses. In order to combat this increase, President Clinton convinced soda manufacturers to pull all sodas from elementary schools and limit the sale of these items in middle schools. Soda manufacturers simply replaced soft drinks with fruit juice and sports drinks where many of these new options contain greater than or equal to the same amount of sugar of a regular soda (Table 2). Vending machines in schools could benefit from the Howard County model of only providing low-caloric and healthy options.

A double-blind, randomized study conducted by de Ruyter, et al. showed that by replacing sugar sweetened beverages with artificially sweetened or other non-caloric beverages led to reduced weight gain and reduced fat accumulation in normal-weight children (de Ruyter, Olthof, Seidell, et al., 2012). This research shows that exposing children to sugar-sweetened beverages leads to an increase in weight gain and provides justification that these items should be removed from schools and replaced with non-caloric options.

*Marketing Restrictions*

In addition to repairing school lunches, the federal government needs to intensify restrictions on marketing high-caloric foods to children. The unhealthiest
foods are marketed most aggressively and children develop brand loyalty at a
very early age (Koplan, Liverman, & Kraak, 2005). There has been an ongoing
debate in Washington over whether or not to limit advertising towards children
and the debate intensified in 2006 when the IOM recommended that child-
targeted advertising should be minimized. The IOM based this recommendation
on the fact that food advertising influences food preferences and short-term
consumption of products, which leads to an unhealthy lifestyle (Koplan & Institute
of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity.,
2007). In addition, children are vulnerable and require societal protection – thus
presenting the strongest argument for government involvement (Swinburn et al.,
2011). Studies have shown that children’s choices are readily affected by
marketing (Swinburn et al., 2011). Studies have also shown that children spend
more time watching television than any other activity outside of sleeping (Miller,
Taveras, Rifas-Shiman, & Gillman, 2008).

It is based on these studies that the U.S. Congress should strengthen its
commitment to fighting childhood obesity, and implement strict marketing
guidelines. A study conducted in Australia demonstrated that limiting high-caloric
food and beverage marketing on television to children is one of the most cost-
effective methods of combating childhood obesity (Haby et al., 2006). Limiting
this type of marketing may be ideal in situations where funds are not as readily
available.
Findings and Conclusions

The obesity epidemic is not slowing down and certainly has come to the forefront as one of our nation’s primary health concerns. Rising health care costs as a result of increasing obesity prevalence rates have led to higher insurance premiums for the entire US population. Sugar-sweetened beverages, increases in sedentary lifestyle, and other high-caloric foods have been identified as they key contributors to the obesity epidemic. While the government has taken some steps at reducing the burden of obesity on this country, several of their policies lacked the essential components of an effective government response. The federal government’s passage of the Healthy Hunger-Free Kids Act lacked the essential coordination between Congress and health-based government agencies such as the USDA and IOM. Maine’s policy, while showing strong political commitment by tightening regulations, allowed too much flexibility by allowing local governments to circumvent their tighter restrictions. The three local policies enacted strict bans that had little financial support and number loopholes. Future policies will need to include educational-based school interventions coupled with physical activity programs, taxes and other price-based interventions, restructuring of the Healthy Hunger-Free Kids Act and advertising restrictions of high-caloric, energy dense foods targeted to children.

Educational components alone will not solve the epidemic; any educational-based intervention will need some additional component such as a wellness program or increase in physical activity to improve efficacy (Force,
Future intervention plans could include requiring physical education five days a week – particularly in elementary and middle schools in conjunction with a healthier food environment. The IOM has stated in its report that all states and school districts should work together to bolster physical education requirements in all grade levels (Koplan & Institute of Medicine (U.S.). Committee on Progress in Preventing Childhood Obesity., 2007).

By making funds available to schools in high-risk areas to help strengthen their lunch programs and increase physical education participation, states and local school districts will be more adequately prepared to fight childhood obesity. Studies have shown that school-based educational campaigns have been proven effective when combined with other intervention strategies such as increasing physical activity. Pigovian taxes have worked in the past to reduce consumption of similar products such as cigarettes. Per WHO recommendations, local governments must work with agencies at the state level to pool resources and utilize the funding to launch interventions.

While there are many stakeholders involved in the obesity epidemic, government does have a responsibility to take on a leadership role, promote health, and help facilitate resources to combat this important health crisis. Studies have shown that effective health promotion consists of public health measures that guide people, communities, government personnel and policymakers to make behavioral changes (González, 2007). Effective leaders in promoting health identify policies that improve health at the individual and
population level. These leaders convince policymakers to improve the environment surrounding individuals so that they can be healthy (González, 2007). Heifetz et al. state that “The hope of leadership lies in the capacity to deliver disturbing news and raise difficult questions in a way that people can absorb, prodding them to take up the message rather than ignore it or kill the messenger (Heifetz & Linsky, 2002).” Reducing obesity is not easy and will undoubtedly require difficult decisions by political leaders as Heifetz et al. state.

So much of a program’s success depends upon how high of a priority the government gives a certain issue. Funding for population-based services needs to be increased to meet the demand for educational services, nutritious school lunches, and rigorous physical education programs. Several strategies were outlined above that have been effective in previous public health campaigns and may contribute to the goal of reducing childhood obesity. However, a comprehensive plan to defeat obesity must not include only government agencies and elected officials. In the case of childhood obesity, the priority must come from concerned parents, the medical community, and responsible businesses in addition to government officials (Koplan et al., 2005). By launching grassroots campaigns, forming strong coalitions and placing pressure on government officials, fighting obesity will become more and more important to the national agenda as the years move on.
References


