A Policy Analysis to Address Childhood Obesity in the United States

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1. Current Issue in Public Health Nutrition

Childhood obesity is one of the most serious public health problems in the United States. It is defined as an excess of body fat for children and adolescents aged 2 to 19 years, determined by exceeding the 95th percentile boundary in CDC sex-specific BMI-for-age growth charts (1). In 2015, there were about 13.7 million children and adolescents who are obesity, accounting for 18.5% in their age bracket (2). Moreover, studies have demonstrated higher obesity prevalence in Hispanic (25.8%) and non-Hispanic Black (22.0%) children than the non-Hispanic White (14.1%) and Asian (11.0%) (2), which emphasized the needs for paying more attention to those vulnerable populations and certain ethnic groups. Statistics have also shown that prevalence of childhood obesity increased from 13.9% to 18.5% through 1999 to 2016, and the ratio is expected to keep growing in the upcoming future (2).

Childhood obesity is an important public health problem because it is highly associated with a series of physical and socio-emotional complications that will affect the health growth and development of children and adolescents. Research has showed that obese children are more likely to be diagnosed with Type 2 diabetes, high cholesterol and high blood pressure, joint pain, breathing problems, and nonalcoholic fatty liver disease, which put children in a poor physical health condition (3). In addition, childhood obesity will have a negative impact on children's social and emotional health. Research has shown that many obese children are teased and bullied by peers due to their weight and body shape (1). They are discouraged from participating in any physical activities, which lower their self-esteem and self-confidence, as well as influencing their academic

performance. Therefore, childhood obesity is an important issue that will potentially threaten children's physical and mental health.

2. Definition of the Problem

The prevalence of childhood obesity is very high in the United States, affecting nearly 13.7 million children and adolescents.

3. Causal Map

The causal map describing the causes of childhood obesity can be referred to **Figure 1** in the appendix.

4. Review of Scientific Evidence

There are several potential factors contributing to childhood obesity, and we can classify these multi-dimensional reasons into three main levels, which include: *individual level* that analyzes physiological attributes of childhood obesity, *behavioral level* that looks into obese children's life pattern and food choices, and *environmental level* that investigates how available resources and social environment result in these obesity-related behaviors. On the individual (physiological) level, childhood obesity mainly results from the imbalance of calorie intake and expenditure, in which higher calorie intake is accompanied with lower calorie expenditure (3). We picked up three factors in the causal map to further review their scientific evidence.

Firstly, high-calorie foods and drinks is one of the major causes of childhood obesity, among which the over-consumption of *sugary beverages* is paid much attention by health professionals. A survey in 2013-2014 has found that adolescents are consuming 150-200 kcal on average from sugary beverages every day, and some even consume 250-300 kcal per day (4). Research has shown that children who drink sugary beverages over 4 times each week have 24% higher risk of obesity than those who consume less (5). Several studies have demonstrated that too

much sugary drink consumption will directly contribute to children's weight gain and obesity, as drinks can be consumed quickly and children won't feel satiety, thus leading to a high calorie intake in a very short time (1). Besides, over-consumption of high-fat or fried foods, and insufficient intake of fruits and vegetables will also increase the risk of childhood obesity (5).

Second, easy *access to unhealthy foods* is another important factor that contributes to childhood obesity. Previous study has concluded that high access to healthy foods from supermarkets is a critical approach to solving childhood obesity on a long-term basis (6). When households have high access to the nearby supermarket within the community, children tend to have a lower BMI and a lower risk of obesity (7). However, easy access and exposure to unhealthy food will cause childhood obesity. A previous study has found that a fast-food restaurant located near the school district will increase the obesity rate by 5.2% (6). A large number of convenience stores is also expected to increase the childhood obesity rate because this retail marketing environment brings about much unhealthy foods to family and children (8).

Third, *physical activity* is another main component of childhood obesity (6). Nowadays, there is a large number of school children who lack physical activity. A research on middle school students has shown that over half (52.4%) of them were classified as sedentary (9), which will highly increase their risk of childhood obesity. It is suggested that all the children should have aerobic activity for no less than 60 minutes every day, but most cannot follow this guideline (6). On the other hand, physical activity is regarded as an effective method in the treatment of childhood obesity, as it will promote energy expenditure and burn body fat (10). The lack of physical activity may also result from factors such as limited time on sports, commuting with automobile, and long-time watching TV or playing video games (6).

In conclusion, we have reviewed three key factors that are associated with childhood obesity, including sugary beverages (high-calorie foods and drinks), easy access to unhealthy foods, and lack of physical activity. These reasons, along with other potential factors, are interconnected and equally important when analyzing the issue of childhood obesity.

5. Prioritization Matrix

The prioritization matrix can be referred to **Table 1** in the appendix.

Four criteria were chosen in this matrix, which include costs, effectiveness, equity, and feasibility. *Costs* is defined as the amount that has to be paid or spent by the government or other stakeholders to solve the issue of childhood obesity. It should be considered in the policy evaluation because cost is an essential factor when developing an effective policy. A high cost will increase the risk and burden of the government and other stakeholders, making the policy less likely to be successful. *Effectiveness* is defined as the degree to which the policy is successful to reduce the rate of childhood obesity. It is important because we need to evaluate whether the proposed policy can bring about the expected results. A policy with low effectiveness will be less meaningful to put into practice. *Equity* is defined as the degree to which no group or individual is unfairly treated from the policy of solving childhood obesity. Equity plays an important part in this policy evaluation process because we need to take care of all the populations, especially for the vulnerable populations who are at high risk of childhood obesity. *Feasibility* is defined as the degree to which this policy will be accepted by the policymaker and the general public. Feasibility is also essential because the ultimate goal of policy formulation is successful policy implementation. If the proposed policy is hard to be conducted and creates confusion to the public, it won't be a good one.

I chose to evaluate these criteria from a long-term perspective, as childhood obesity is a long-term issue that cannot be solved immediately. There is an increasing number of obese children and adolescents, and we need to think further about how to reduce the risk of childhood obesity in a sustainable way. Therefore, we not only need to take into consideration any potential factors that will cause childhood obesity, but also to assess whether these proposed policies will better facilitate children's health development, as well as obesity treatment in the long-term period.

6. Proposed Policy

The proposed policy is that fast-food restaurants are not allowed to locate near the school districts.

The policy is expected to address some of the causes of childhood obesity, including high-calorie dietary intake, overconsumption of fast foods, and easy access to unhealthy foods. In this analysis paper, the defined problem is a high prevalence of childhood obesity, and thus one of our goals is to reduce the rate of childhood obesity by eliminating some risk factors. As was mentioned in the evidence review, fast-food restaurants close to the school district will make school children have easier access to unhealthy foods, which will further lead to obesity problem (6). In this case, limiting the proximity of fast-food restaurants to schools will be effective to prevent children from getting unhealthy foods. This policy is regarded as one of the most optimum one in the prioritization matrix, with its perceived relative lower costs, high effectiveness, equity, and feasibility compared with other policies. To further analyze the pros and cons of this proposed policy, we identified some of its strengths and weaknesses.

One of the strengths is that this proposed policy is highly effective to reduce children's access to fast-food restaurants by making such a zoning restriction. When there is no fast-food restaurant near schools, it is expected that children will rely more on school lunches or home-made

foods that are definitely much healthier, compared to the fried and high-fat foods (11). Another strength is that this policy promotes health equity and justice. All the children in any school districts, regardless of ethnicity, family income, or socioeconomic status, will have lower exposure to unhealthy fast foods. Therefore, in this policy of solving childhood obesity, no certain group or individual is unfairly treated.

The weakness is that it is not yet clear how far should fast-food restaurants be away from schools. Each school district is a different case, and it will be a high cost if we evaluate the food environment case by case. Another weakness is that the policy hasn't made a clear definition of fast-food restaurant, and this may cause ambiguities when identifying the types of restaurants. It is feasible if we invite registered dietitians to evaluate the menu in every restaurant near the schools, but it will also be a high cost.

The assurance of this policy will mainly depend on the degree to which it will effectively reduce school children's access to fast-food restaurants. From the perspective of policy implementation, the local government can negotiate with fast-food restaurants, asking them to relocate and provide them with financial support; or the government can help the restaurants switch their menus to a series of healthy food options with the guidance of nutrition professionals. In addition, urban planners are needed to formulate the banned regions of fast-food restaurants based on the different situations in various school districts. From the perspective of policy evaluation, we can conduct a 24-hour recall by randomly selecting a number of student samples from a variety of school districts. By collecting and analyzing the foods students eat, we can know whether or not this policy can effectively reduce students' fast-food intake, so as to lower the risk of childhood obesity.

7. Comparison to the Status Quo

The *proposed policy* states that no fast-food restaurant is allowed near the school districts. The *current policy*, however, states that "the local government has the zoning power to control local fast-food business and require a minimum distance from schools" (12). Compared to the proposed policy, the current policy only applies on the community level, which didn't make a clear and universal regulation across the country on how fast-food restaurants should be away from schools. The policy being proposed is expected to set a clear and rigorous guideline towards fast-food restaurants on the federal level, for eliminating unhealthy food access around school districts in the United States. There are several stakeholders involved in this policy, including school children, fast-food restaurants, local government, and nutrition professionals.

For school children, the proposed policy can bring them with a more healthy and reliable food environment, where they will no longer be at any risk of being exposed to any fast-food restaurants around their schools. They will gradually be accustomed to eating a healthy diet, which can greatly prevent them from childhood obesity. The proposed policy is not expected to cause any loss to school children because the main goal of this policy is to protect them. The current policy, though doesn't bring any loss to school children either, cannot bring the benefit to all the children in the United States because it depends on the regulation of each local government. As was mentioned before, Black populations are more susceptible to childhood obesity compared with other ethnic groups, and research has also shown that black communities tend to have higher access to fast-foods (13). In this case, we suspect that the current community level policy is not powerful enough to bring equity and cannot protect those vulnerable populations from the unhealthy environment. And the proposed federal level policy, to a large extent, will reach out to all the children and adolescents and help them get rid of fast food.

For fast-food restaurants, they will be at a loss from the proposed policy because the policy puts forward a higher demand of health and nutrition requirements, which may add higher burden to their operation cost. They cannot gain much from the proposed policy, but if they switch their business into healthy foods around the school, they are still expected to gain sales profits. Obviously, they can gain much more from the current policy, as they have higher freedom to choose the location, food types, and customers for selling. It seems that the current policy doesn't cause much loss to the fast-food restaurant as the regulation is not clear.

For the local government, the proposed policy will place higher expectations on their effective governance, which is regarded as a loss because the government needs to make higher efforts in accordance with this federal level policy than before. The local government plays a key role in the proposed policy implementation, where they are expected to negotiate with the fast-food restaurants and coordinate zoning for a healthy food school environment. However, the government can also gain from the proposed policy, because a healthy food environment is an important factor to represent its governance capacity (14). In comparison, the current policy authorizes the local government a higher flexibility to regulate local food business, which is bringing both gain and loss to the local government. A high tax revenue from fast-food restaurants will give the government more capacity to promote economic growth (14). While the loss is that an increasing number of fast-food restaurants is worsening the healthy food environment within the local community and making childhood obesity a larger issue.

For the nutrition professionals, the proposed policy will bring much gain but no loss. The proposed policy develops a more rigorous health and nutrition criteria when evaluating the restaurants around the schools, and nutrition professionals, especially registered dietitians, are given higher expectations to assess whether the restaurant provides healthy or unhealthy foods.

They are also expected to give more professional guidance to the local restaurants in promoting the food menu and cooking techniques. This will be a good opportunity for nutrition professionals to apply their expertise into practice, which is highly rewarding. Nutrition professionals do not participate much in the current policy, as there is no requirement to evaluate the food quality of restaurants around the school. Therefore, the current policy doesn't cause any gain or loss to the nutrition professionals.

In conculsion, the implementation of this proposed policy will help to decrease children's access to unhealthy foods, which may contribute to a lower rate of childhood obesity in the United States. Compared to the current policy, the proposed policy has raised a higher expectation on building up a healthy food environment towards school children, which brings much more gains than its losses. One highlight of this proposed policy is that it is committed to health equity, which takes all the children in the United States into consideration. As there is a significant difference of childhood obesity rates among different ethnic groups, it is necessary to develop the policy from the perspective of social equity and justice. We also have to admit that childhood obesity is a complicated public health issue with a series of causes, and thus the proposed policy by itself cannot solve the problem in a short-term period. While for this proposed policy, it is expected to solve the cause of *easy access to unhealthy foods*, which is one of the major factors of childhood obesity. Therefore, with adequate supporting evidence collected, the proposed policy that "no fast-food restaurants are allowed near the school districts" will have a long-term positive impact on decreasing the prevalence of childhood obesity in the United States.

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Appendix

Figure 1. Casual Map

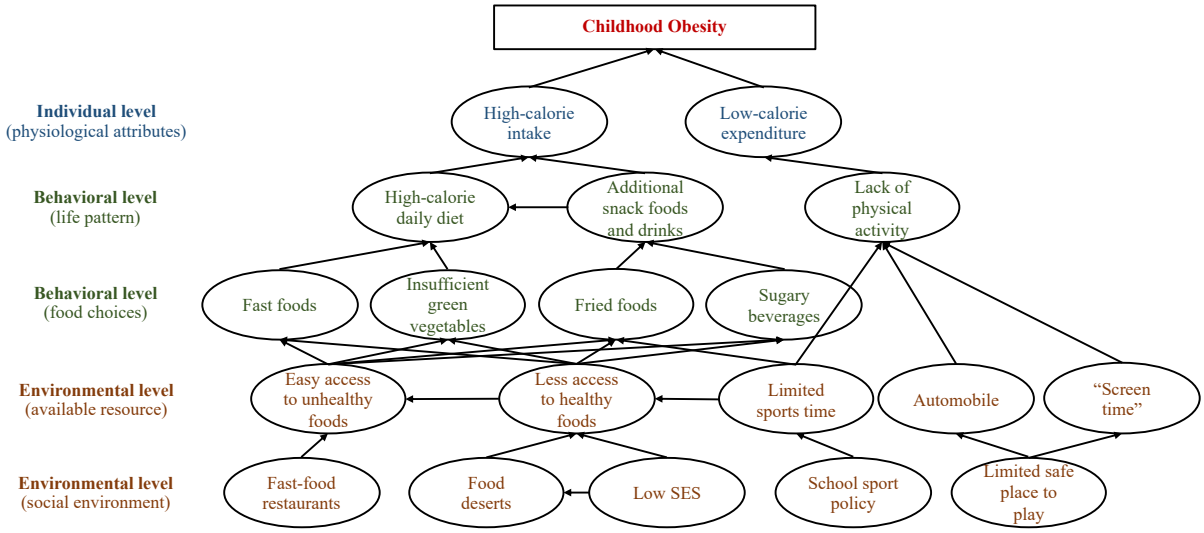

Table 1. Prioritization Matrix

Policy	Costs (1)	Effectiveness (2)	Equity (3)	Feasibility (3)	Total
No selling on sugary beverages	**5**	7 **14**	7 **21**	7 **21**	61
Lower prices for fruits and vegetables	**6**	8 **16**	6 **18**	8 **24**	64
More supermarkets near local communities	**5**	8 **16**	8 **24**	7 **21**	66
No fast-food restaurants near school districts	**7**	9 **18**	9 **27**	8 **24**	76
More physical activity time for school children	**8**	6 **12**	8 **24**	7 **21**	65
More safe places to walk and bike	**7**	6 **12**	8 **24**	8 **24**	67

Definitions of listed criteria:

- Costs: The amount that has to be paid or spent by the government or other stakeholders to solve the issue of childhood obesity.
- Effectiveness: The degree to which the policy is successful to reduce the rate of childhood obesity.
- Equity: The degree to which no group or individual is unfairly treated from the policy of solving childhood obesity.
- Feasibility: The degree to which this policy will be accepted by the policymaker and the general public.