Sugar Taxes:

Why They are Needed and Where are They?

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Why are They Needed?

Obesity is a growing epidemic afflicting the health of many Americans. Today, over one third of U.S. adults fall under the category of obese (Ogden, 2012). The definition of obesity according to the Centers for Disease Control exists when a person has a Body Mass Index that exceeds 30. Body Mass Index (BMI) is a number calculated from a person's weight and height and provides a fairly reliable indicator of body fatness for most people. This metric is employed to classify individuals into weight categories that may lead to future comorbidities. Obesity is a core contributor to the increase of risk for serious health complications such as Type II Diabetes, cancer, and cardiovascular disease. Up to 17% of children and adolescents are reaching obesity levels, an alarmingly growing number compared to just a generation ago (Ogden, 2012).

While all racial groups are affected by the epidemic of obesity, Latinos and African Americans are disproportionately affected. Inequities, like income, stable and affordable housing, quality and education, all contribute to the mortality and healthy life of the individual. African Americans are 1.5 times more likely to be obese than their white counterparts (Ogden, 2012). Approximately 47.8% of the African American population is obese with men accounting for 37.1% and women 56.6% (Ogden, 2012). The white population, however, has a 32.6% rate of obesity with both men and women accounting for the same percentage (Ogden, 2012). While there are a myriad of factors that influence obesity rates, especially those of minority groups, this paper will focus primarily on the sugar taxes in place to correct the obesity epidemic.

One common claim against a sugar tax is that it will disproportionately affect the poorest members of our society. Although this may seem to be the case at first, the real hope is that prices for sugary beverages will increase and hopefully lead to a decrease in the consumption of empty calories. In reality, it is poorer Americans that eventually “pay the price” for these

low-cost goods as they can lead to shorter life expectancy and decreased health. An individual who is obese is more likely to have comorbidities and use a larger portion of their income towards healthcare costs (Bhattacharya, 2009). Medical bills, on average, cost an obese individual \$732 a year more than an individual with a normal weight (Bhattacharya, 2009). According to one study, medical costs in America that are associated with obesity are as high as \$168.4 billion (Cawley, 2014). This estimate is 16.5% of the total health health expenditure in the United States (Cawley, 2014).

In the United States, the average person consumes nearly 50 gallons of soda in a year (Bardi, 2014). This amount signifies that, on average, each American consumes approximately 39 pounds of sugar every year (Bardi, 2014). The American Heart Association (AHA) has current recommendations that individuals should consume less than six teaspoons for women and nine teaspoons a day for men, respectively (Nelson, 2012). Of note, a typical 20-ounce bottle of a sugary beverage contains nearly 16 teaspoons ($\frac{1}{3}$ cup) of sugar equivalent. One drink goes over one's daily allotment of sugar. Just imagine having that much sugar in one cookie, let alone a can of soda.

“Empty calories” is the phrase that perfectly defines what soda and other sugar-sweetened beverages provide for consumers. These drinks provide little-to-no nutritional benefits, and do little to stave off one’s hunger. Studies have shown repeatedly that when liquid calories are consumed simple sugars do not curb hunger or quench thirst in the same way that food or beverage does that contains proteins (Hopkin, 2006). Thus we conclude that beverages with a high sugar content will merely add to the number of calories consumed rather than replace them.

In a recent advertising campaign, Coca-Cola came up with the phrase, “All Calories Count.” Their conclusion is that all calories are equal and that the sources of calories will have the same effect on the body. This is not the case. High fructose corn syrup (HFCS) is an inexpensive sugar that is subsidized by the tax dollars. In the United States, the majority of sodas and sugary drinks are filled with HFCS. A Princeton study compared the effects of HFCS to pure cane sugar on rats (Borclasy, 2010). Rats who consumed high-fructose corn syrup notably increased in weight more than those who ate basic sugar, even when the overall caloric intake was identical (Borclasy, 2010). It should also be noted that besides significant weight gain, the consumption of high-fructose corn syrup over an extended period of time likely caused the rats to demonstrate increased abdominal fat and elevated triglyceride levels (Borclasy, 2010). As high fructose has become so common in our diet, and not only in sodas, it can hardly be a mystery as to why our obesity rates have increased so rapidly.

Even though this proposed excise tax appears to unfairly target sweetened beverages, these drinks play a large role in the increase of overweight individuals and should not be supported through subsidies. There is convincing evidence that demonstrates a link between obesity and the consumption of sweetened beverages, like sodas, energy drinks, and sports drinks. Since the obesity crisis began over 30 years ago it has been found that soda and other sugary drinks have constituted nearly 40% of the new calories that Americans have consumed (Bray, 2013). Since these beverages are such a high percentage of the new calories they are likely a major contributor to the obesity epidemic (Bray, 2013). Waistlines are growing, not just in the United States, but across the world and there is little evidence that this trend will not continue.

Do Taxes Change Actions?

Excise taxes have been traditionally introduced to change behaviors. There is no greater example than the introduction of a tax on smoking products. Because of all the harmful health effects, cigarette taxes were enacted to reduce the incidence of smoking. Despite strong resistance from tobacco and cigarette companies, as well as smokers, these bills and laws were considered acceptable for the sake of the future. This excise tax for tobacco products proved to be effective in not only reducing the number of people that smoked, but decreased the number of youth that initially started smoking. Across the United States it was found that for every 10 percent increase in cigarette costs there is a reduction in teen smoking by approximately seven percent and total cigarette use by four percent.

The United States and the world are in the midst of yet another preventable health crisis with obesity and diabetes numbers that are ever rising. Little can be accomplished to reverse these trends if we surrender to profits of corporations and individual taste buds. Different municipalities have been hoping to follow the same blueprint as the tax done on cigarettes. Some municipalities are cities, like Berkeley, CA and Philadelphia, PA, and others are countries, like Chile and Great Britain. Some have taken slightly different approaches and this literature review will look at their approaches as well as the outcomes for those taxes that have been in effect long enough to have data showing their trajectory.

Where are They?

Berkeley, CA

Berkeley became the first city in the United States to pass a sugar-sweetened beverage (SSB) tax. It is a city of 112,000 and has a rather high socioeconomic level. The citizens passed a proposition that was a one cent per ounce of sugar tax on SSB. Local officials tout a self-reported

50% decrease in soda consumption in Berkeley, but revenue from soda taxes have remained stagnant since the conception of the tax (Silver, 2013). It is also noted that while there may appear to be a decrease in the amount of soda purchased in Berkeley, about 9%, there has been an increase in purchases in neighboring cities, approximately 7% (Silver, 2013).

Philadelphia, PA

In 2017 Philadelphia followed the framework of Berkeley, but instead of a 1 cent per ounce tax they instituted a 1.5 cent per ounce of sugar tax. These were all on added sweetened beverages and, unlike other cities, also included artificial sweeteners. Philadelphia is an interesting subject to study as their demographics match much more of the general population of the United States than cities like Boulder and Berkeley, which are much more monolithic in their income level and race (Seiler, 2021). Researchers pointed out that while there was a decrease in soda purchases in Philadelphia, there appears to be an increase in purchasing outside of the city where the tax is not present (Seiler, 2021). Because the cost of the tax was almost exclusively passed onto the consumer they were more likely to travel outside the city limits (Seiler, 2021). One important factor that these researchers discovered is that since sugary juices do not have any added sugars they are not taxed, they were purchased more often (Seiler, 2021). They did note that there was likely a 16% decrease in calories consumed, but that unfortunately was not statistically significant (Seiler, 2021).

Navajo Nation

Native Americans have been especially hard hit by the epidemic of obesity and diabetes. Data compiled by the Health and Human Services shows that Native American obesity rates are 50% higher than the white population in the United States and are more likely to have diabetes at a rate of 3 to 1. In 2014, the Navajo Nation passed the Healthy Diné Nation Act (HDNA). This

act not only placed a tax of 2% on SSBs, but also on snacks that were deemed to be high in salt, fat or sugar (Chapter, 2018). While the effects of this law remain to be seen, the residents have noted that they are more aware of the health concerns that affect the Navajo Nation (Chapter, 2018).

Great Britain

Great Britain took a different approach to the sugar tax. They are also concerned with the increasing rates of obesity as well as diabetes. Instead of a tax per ounce of sugar they decided to take a tiered approach. Sugary drinks with more than 8 grams(g) of sugar per 100 milliliters(ml) are taxed 24 pence per liter (Public Health England, 2019). Drinks with 5-8 g per 100ml have an added tax of 18 pence per liter (Public Health England, 2019). Beverages with less than 5g sugar per 100ml are not affected by the tax (Public Health England, 2019). Like many other municipalities real fruit juices and milk based products were not taxed. Due to its widespread effects, this tiered tax is much harder to avoid.

One of the effects of this was that more pressure was put on companies to reformulate and change their advertising to meet the changes in the market. Soda companies, to avoid the additional tax on their products, reduced the amount of sugar. Some companies embraced artificial sweeteners and began increasing their advertisement for these products as an alternative to their normal product line. Because of these measures the nation saw a 29% decrease in sugar consumption (Public Health England, 2019). Public Health England estimates that the rate of obesity could decrease by 144,000 as well as a reduction in the number of diabetic patients (Public Health England, 2019).

Chile

Chile has taken a rather aggressive approach to decreasing their rates of obesity. Nearly 45% of the nation's children are obese or overweight (Ritchie, 2017). To help combat this they took a multi-faceted approach. Not only did they implement a 18% tax on SSBs, but they removed advertising of junk foods/drinks and eliminated unhealthy food in schools. One of the other important measures that they took was to improve their food labels that made it easier for parents and kids to know which foods were most hazardous to one's health. This was done by placing a black "stop sign" that was based on the sugar, salt, and fat content. With their extensive policy work they have seen an almost 28% decrease in calories purchased and a 25% drop in sugar consumed (Taillie, 2020).

So What Actually Works?

It is truly difficult to assess the efficacy of these laws as of right now. One of the main goals of all of these policies presented is to decrease the current obesity rates, the diabetes rates, and the burden of disease caused by them. Studies that would accurately show strong correlations would require years of data collection and extensive questioning. Not enough time has passed in order to make such assessments.

From the cases above, it does seem important to take a multifaceted approach to this problem that faces the world currently. One of the important factors is that it must cover a large enough area. In places like Berkeley and Philadelphia, it appears that residents are merely cross-border shopping or driving to avoid the tax. This tax is changing behaviors, but apparently does not have the desired effect. One of the main benefits of a tax in a city is increasing revenue, but its ability to change health outcomes appears to be limited. It, therefore, seems to be more effective to have a tax that covers an entire state or even a country. This prevents the tax from being avoided and, thus, the tax is likely to be effective in accomplishing its goals.

In countries like Chile they did more than just create a tax. They established other policies to decrease the access to convenience foods and marketing of unhealthy foods to children. Navajo Nation included snacks with high contents of fats, sugars, and salt. The tiered system in Great Britain is interesting as it changed attitudes of marketing and the products. Companies decreased the amount of sugar in some of their soft drinks. It is hard to determine which tax style (flat, tiered, or incremental) is most effective at decreasing the amount of sugar consumed in the liquid form. It will be important to analyze the effects of doing more than just a tax on SSBs.

Regressive Tax

One important thing to note about any tax that is equal amongst all participants is that it is typically a regressive tax. This is particularly true with the soda taxes that are in place in the smaller jurisdictions. Wealthier individuals have the means to travel outside of the taxed area and can purchase the drinks at a cheaper price. Those in poorer areas are more likely to be obese and the thought was that increasing the cost would drive them to other options that would be healthier. In Philadelphia they saw that the decrease in purchasing of soft drinks was not nearly as high in lower-income neighborhoods as it was in more affluent ones (Seiler, 2021). This shows that the burden of this “sin” tax appears to fall on the shoulders of those who are least able to bear the cost.

Health or Revenue Measure

The justification for taxes like this are to improve dietary decisions of its citizens by increasing costs that will hopefully decrease consumption. This will in turn decrease rates of obesity, which will likely decrease the disease prevalence of diabetes, heart disease, non-alcoholic fatty liver disease, and a myriad of other diseases. While the true effects of an

excise tax like this can only be seen many years out, the immediate effects on the health of citizens seems to be limited.

Data from Centers for Disease Control and Prevention

One of the main goals for this tax was to decrease obesity and diabetes. While far from conclusive, the rates of obesity and of diabetes for Berkeley and Philadelphia have not changed or have actually increased since the institution of their SSB taxes. Berkeley's tax started in 2015 and Philadelphia in 2017. More and deeper data analysis needs to be done, but these data points for Berkeley are not reassuring when it comes to the health effects of a SSB tax.

A recent study showed that Berkeley tax may have caused a 50% reduction in soda consumption since its inception (Lee, 2019). While this may be hopeful, this data is founded on

self-reported data from customers, which allows for a lot of inaccurate information (Lee, 2019). Individuals may not realize how much they are actually buying or may want to minimize how much since it is potentially socially undesirable. Revenue from the soda tax, approximately 1.5 million annually, has not decreased substantially since it was instituted and would indicate that the rates of consumption have not dropped as drastically as other data suggests (Lee, 2019). While the aim was to improve health, this may have turned into a way to increase revenue in the city.

Additional Policies to Consider

All of these municipalities are aiming to curb the excess sugar and calories that are consumed from liquid beverages. One problem is that the majority of the policies miss important drinks that are consumed, especially by kids, that are contributing to obesity. Fruit drinks and sweetened dairy products, like chocolate milk, are missing from the list of beverages that can contribute to obesity. These beverages still contain relatively high levels of sugar, even though it is “natural,” and are contributing to the obesity epidemic (Wojcicki, 2012). With fruit juice excluded from the tax, it could easily be added as a “natural sweetener” and avoid the tax while still causing the same result. In addition to these types of beverages, alcoholic beverages would be another way to decrease consumption of excess calories from sugar. It would be an oversight as well to not add unhealthy snacks as these also contribute to the increase of excess calories with limited nutrition. Hopefully, strong data from the Navajo Nation can lead in the development of meaningful policy.

The inspiration for this tax can be linked back to the taxation of cigarettes and how effective that was at decreasing the number of smokers as well as stopping younger individuals from starting. It was incredibly successful in nearly every metric. The aspect of what made it so

impactful was that the tax was so high. Some taxes are as high as almost 50% of the cost of the cigarettes (Boonn, 2015). Without a high enough tax, there may not be enough of a deterrent to stop people from purchasing SSBs. Tax increases could be based on the amount of sugar, the size of the drink, or could be a flat tax. Regardless, without a high enough tax it will be difficult to have consumers change their usual purchasing habits.

Aside from basing a tax on SSBs, there could even be a tax on added sugars, including fruit juices. There are many products that have added sugars like pasta sauce or peanut butter. These factors should be added to discourage companies from adding unnecessary sugars. More countries should follow the lead of Chile where food labeling is not only easy and clear, but there is easy labeling to clearly mark foods that should be eaten very sparingly.

One final thought is the idea of supporting an alternative. Most of the revenue raised from these sugar taxes go towards education programs. While it is important to continue educating the public, especially children, an alternative to SSBs needs to be offered and marketed. The hope is that the public will move towards water because it is a cheaper alternative. Some of these taxes could go to lower the cost of low-calorie drinks or to improve the water infrastructure in areas where the tap water is not potable.

Conclusion

Sugar Taxes are becoming a popular and possibly effective means of curbing the obesity and diabetes epidemic. It can in no way be considered a silver bullet, however. Just as sugary drinks are not the sole cause, the tax can not be seen as the solution. The only thing that seems certain is that the cost of doing nothing is more than we can afford. Multiple countries and cities have tried to deal with this issue and hopefully the best plan can be developed to mitigate the problems that surely await us in the future. Sugary beverages provide no health benefits and

action should be taken to mitigate their effects. If corporations refuse to act, government interventions should be implemented. Accompanied with other measures, taxes on sugar-sweetened beverages have the potential to reverse the current course of worldwide health.

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