Study on the Positive Effects of Stopping Soda Consumption Grant Proposal

STUDENT NAME

The University of North Carolina at Chapel Hill

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**Abstract:** The objective of this study is to assess the health effects of soda intake cessation in high and low intake groups with and without health problems related to consumption. Our specific goal is to evaluate the health benefits of diet and regular soda intake termination on both physical and chemical levels. The percentage of Americans who are overweight and/or obese, is on the rise because of poor health choices we make as a society. The excess pounds stem from diets that are heavy in calories, but lacking in nutritional value. Soda is one of the main sources of these empty calories and this project sets out to assess soda’s harmful effects on the body by observing health effects of ceased soda intake over the course of a year.

**Introduction:** While a main source of empty calories in the less-than-ideal American diet, overconsumption of soda has also been proven harmful to the body. High fructose corn syrup and carbonation in regular sodas account for weight gain and magnesium imbalance (causes bone deterioration), while benzene and aspartame (rat poison linked to brain damage) are harmful chemicals found in diet soda. Scientists have done many observational studies on the body’s reaction to high soda intake, but little, if any attention has been given to the effects of soda intake cessation on overall health. How does the body react to lack of soda? How much, if any, does it improve in health, form, and function? The aims of this research are to assess the health benefits of a diet without soda by evaluating chemical changes (through blood work) and physical changes (as noticed by the participant).

**Literature Review:** Today, America is dealing with a health crisis of epic proportions. Half of the nation’s population is overweight and a third is obese. A large factor that plays into the wider waistlines of Americans is excessive daily caloric consumption. Some calories found in food we consume are void of nutritional value, but one of the main sources of unhealthy calories stems from our drink intake. Our nation’s consumption of sodas alone has increased tremendously over the years. But the big question is: why do we care? From an overall health standpoint, increased soda consumption causes bodily exposure to harmful substances, exacerbates weight gain, and is associated with negative behaviors in children that impact their lifestyles later on. Furthermore, awareness of the harmful effects of soda has led to misconceptions about alternative beverages. America, however, has plenty of solution options.

One of the main problems that regular and diet soda drinkers face is exposure to substances that are detrimental to overall health. According to Films for the Humanities and Sciences, “Fructose (a sweetener that is a derivative of corn) in sodas reduces the ability to build bone mass (especially in developing young adults) by changing the body’s magnesium balance.” Benzene, a carcinogenic chemical in automobile fuel, and aspartame (rat poison ingredient linked to brain damage) are both commonplace ingredients in diet soda. In other words, processed chemicals and sugar substitutes, as well as empty calories, make soda a less than ideal drink choice for overall health.

Excessive soda consumption also leads to weight gain. According to Films for the Humanities, “Being that high fructose corn syrup is sweeter than sugar and not satisfying, people tend to consume more to feel full.” The contents of sugary sodas largely account for the higher weight average in America. According to Term Life Insurance, “Every soda a person drinks increases their chances of becoming obese by 1.6 percent. Soda intake also increases the chances of developing Type 2 diabetes by 80 percent.” Diet drinks are no better in this department. Low-calorie diet drinks can make people gain weight by stimulating their appetites. In fact, people think they are saving calories, so they tend to consume more. In general, soda intake only proves to cause problems as it is associated with many negative behaviors, especially in developing children.

Sugary soda intake is associated with many negative habits in children. Dr. S. Park, an author of a recent study on the negative effects of soda in children, sheds more light on the subject in stating, “School-age children that consume at least a soda a day are more likely to have high BMIs (Body Mass Indexes), get less than 8 hours of sleep a night, earn lower grades, and lead a more sedentary lifestyle than those who consume fewer to no sodas”. In addition, children who drink at least a soda a day are more likely not to be consuming the right amounts of essential foods such as fruits and vegetables. Developmental drawbacks associated with soda may also negatively shape the lifestyles of many children such that they are unable to achieve optimal performance in college or as adults. Fortunately, a large number of people are becoming aware of the harmful effects of soda consumption.

Unfortunately, this rise in awareness of the negative effects of soda has caused many people to consider other drink options, only to be led by common misconceptions. Energy drinks, coffee products, teas, fruit-flavored juices, and sports drinks are not healthier alternatives. Many drinks that we mistake for healthier alternatives are actually loaded with either sugar, caffeine, or both, so it is very important to choose wisely and consume in moderation.

There are a few approaches that will alleviate the problem of poor drink choice. The government could levy a tax on unhealthy options, or people could choose healthier drinks on their own. With regard to UNC, dining halls could cut back on the availability of unhealthy options.

Science has predicted that government intervention has benefits. A recent study estimated that “a tax induced 20 percent price increase on sweetened beverages could cause an average reduction of 37 calories per day, or 3.8 pounds of body weight over a year, for adults, and an average of 43 calories per day, or 4.5 pounds over a year, for children,” according to Dr. T. Smith, an author of a recent study estimating the effects of taxing sweetened beverages. This decline would also be manifested in decreased weight problems for both adults and children. While this may seem like a good option, some would argue that drink taxes would discriminate against those who cannot afford healthier options. However, soda, while affordable, would eventually cause devastating health problems that would be extremely expensive. Notwithstanding, people should be able to choose better health for themselves.

There are plenty of healthy drink options available in moderation. Pure fruit juice and milk are good substitutes for sodas and other unhealthy drinks. These drinks contain essential vitamins such as Calcium, Vitamin C, Vitamin A, and Vitamin D. However, the only drink that doesn’t contain additives and isn’t limited to small servings is water. It hydrates fully, stimulates many beneficial functions throughout the body, and is essential for optimum health. In comparison to other drink options, it is the healthiest.

For UNC, the solution to this problem of unhealthy drink choice could lie in the dining hall and other food/drink shops on campus. The dining hall offers many unhealthy beverages in unlimited supplies for students, only encouraging over-consumption. Furthermore, water is found in the same machine, but is usually tainted with whichever drink it shares a dispenser. It may be useful for the dining hall to consider replacing the unhealthy drink options with healthier choices. Having a separate dispenser for water to prevent contamination by other drinks would also be beneficial. With regard to campus restaurants, there are healthy options, but it is not hard for students to choose poorly. Cutting down on the sizes of unhealthy drinks offered would promote consumption in moderation. It is important for students to choose to lead a healthier lifestyle by limiting consumption of unhealthy beverages, but healthy changes made by the dining hall and campus restaurants would help tremendously.

**Project narrative:**

**Statement of the Problem**: The prevalence of obese and overweight Americans is on the rise, increasing significantly with society’s poor health choices. A normal diet high in calories but low in nutrition is the cause of many health problems nationally. One of the main causes of caloric overconsumption comes from our excessive intake of sugary beverages. One of the most popular unhealthy beverages that we drink in excessive amounts is soda. Many people are aware that high fructose corn syrup is linked to weight gain. There are however, many other ingredients found in regular soda, and even diet soda, that have alarming effects on human health.

**Goals and Expected Outcomes**: Most studies have attempted to identify the effects of harmful ingredients through observational studies monitoring the individual consuming the beverage. However, this study suggests looking at the problem from a different angle. The main focus will be assessing the effects of abstaining from soda consumption. Our aim is to understand how the body recovers from the harmful effects of soda in its absence. This experiment will support the overall hypothesis that cessation of soda consumption leads to improved health (physical and chemical), cognitive function, and energy levels, etc. The results of this study should reflect how much the population is limited by their soda intake, which will shed light on the benefit of leading a healthy lifestyle to quality of life. In addition to using the data from the participants in fulfilling the needs of the project, the participants will understand and appreciate the benefits of being exposed to a healthier, soda-free lifestyle.

**Methodology and Procedure**: In order to evaluate the effects of soda detoxification, participants will be divided into six groups of ten people. Two groups will be diet soda and regular soda consuming control groups. The four remaining groups will be made up of light and heavy regular and diet soda drinkers, with all participants in these groups stopping soda consumption for a year, while maintaining any other nutrition or fitness patterns. Chemical and physical changes in the body throughout the course of the study will be evaluated in two ways. Participants will have blood work done three times throughout the study to assess chemical changes, and they will also fill out a detailed assessment monthly, indicating how they feel from a physical standpoint.

**Personnel:**

My qualifications for this work stem from previous research and experiences with effects of soda consumption and cessation. In the summer after my eighth grade year, I decided to see whether I could give up soda to improve my health. I noticed that my cognitive function, physical fitness, and energy levels increased tremendously. I even began to limit consumption of other unhealthy foods in order to try to improve my health even more.

At the North Carolina School of Science and Math, I became an officer in a club focused on overall health and body image called the Body Beautiful Club. Through my involvement in this club, I was able to spread awareness to others at NCSSM about the benefits of living a healthy and active life. Now, five years later, I look back on giving up soda as the first step in a journey to a healthier me, one that has sparked my interesting in majoring in Nutrition at UNC Chapel Hill.

I will be overseeing the work for this project by organizing the groups for the study, hiring medical personnel, generating surveys for the physical descriptions of health effects, and keeping track of participant progress. In order to carry out the project, I will need medical personnel to do the blood work and acquire test results. Grant funds will be used in part for medical personnel to accomplish their work.

**Budget and Budget Justification**:

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| Category | Cost | |
| Medical Personnel | $450 | |
| Physical Evaluation Surveys | $100 | |
| Blood Content Tests | $1450 | |
| **Total** | **$2000** |

Four medical personnel will be hired to collect blood samples three times

during the study and paid $12.50 an hour. The blood work is estimated to take three hours of time, which adds up to a total of $450 spent. Printing the examination surveys will require about 3 reams of paper, valued at $4.50 a ream and two cartridges of black ink, valued at about $20 a cartridge, which adds up to about $100 in total printing costs. Blood content tests (with insurance rates) are estimated to cost about $8 per test. With sixty participants evaluated three times, the overall cost of blood testing is $1450. The combined total adds up to $2000.

**Timeframe:**

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| November 13th, 2012 | Preliminary Blood Test  First Physical Check-up (Self-exam) | |
| December 13th, 2012 | Physical Check-up | |
| January 13th, 2013 | Physical Check-up | |
| February 13th, 2013 | Physical Check-up | |
| March 13th, 2013 | Physical Check-up | |
| April 13th, 2013 | Physical Check-up | |
| May 13th, 2013 | Blood Test to Track Progress,  Physical Check-up | |
| June 13th, 2013 | Physical Check-up |
| July 13th, 2013 | Physical Check-up |
| August 13th, 2013 | Physical Check-up |
| September 13th, 2013 | Physical Check-up |
| October 13th, 2013 | Physical Check-up |
| November 13th, 2013 | Final Blood Test  Final Physical Check-up |

**\***Note: Physical check-ups require filling out a survey that assesses overall physical health from the standpoint of the participant.

**Sources**:

1. Films for the Humanities & Sciences, (2008). *Obesity in a bottle: Understanding liquid calories and nutrition*. Retrieved from <http://digital.films.com.libproxy.lib.unc.edu/PortalViewVideo.aspx?xtid=41223>
2. Smith, Travis A., Biing-Hwan Lin, and Jonq-Ying Lee. *Taxing Caloric Sweetened Beverages: Potential Effects on Beverage Consumption, Calorie Intake, and Obesity,* ERR-100*,* U.S. Department of Agriculture, Economic Research Service, July 2010.
3. Anonymous. (2009). *A sip of soda: How soft drinks affect your health*. Retrieved from <http://www.termlifeinsurance.org/harmful-soda/>
4. Park , S., Sherry, B., Foti, K., & Blanck, H. (2012, January). *Self-reported academic grades and other correlates of sugar sweetened soda intake among us adolescents*. Retrieved from <http://www.andjrnl.org/article/S0002-8223(11)01511-2/references>