

301 Penny Lane, APT 1
Ruston, LA 71270
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Dr. Susan Roach, Director
School of Literature and Language,
P. O. Box 3162
Louisiana Tech University
Ruston, LA 71272

Dear Dr. Roach:

Below is my submission for my report titled: The Big Problem of Obesity in America. Through the research I have looked at what makes an adult gain weight, why we as American's seemed to be gaining weight so rapidly, and a few solutions to battle this problem.

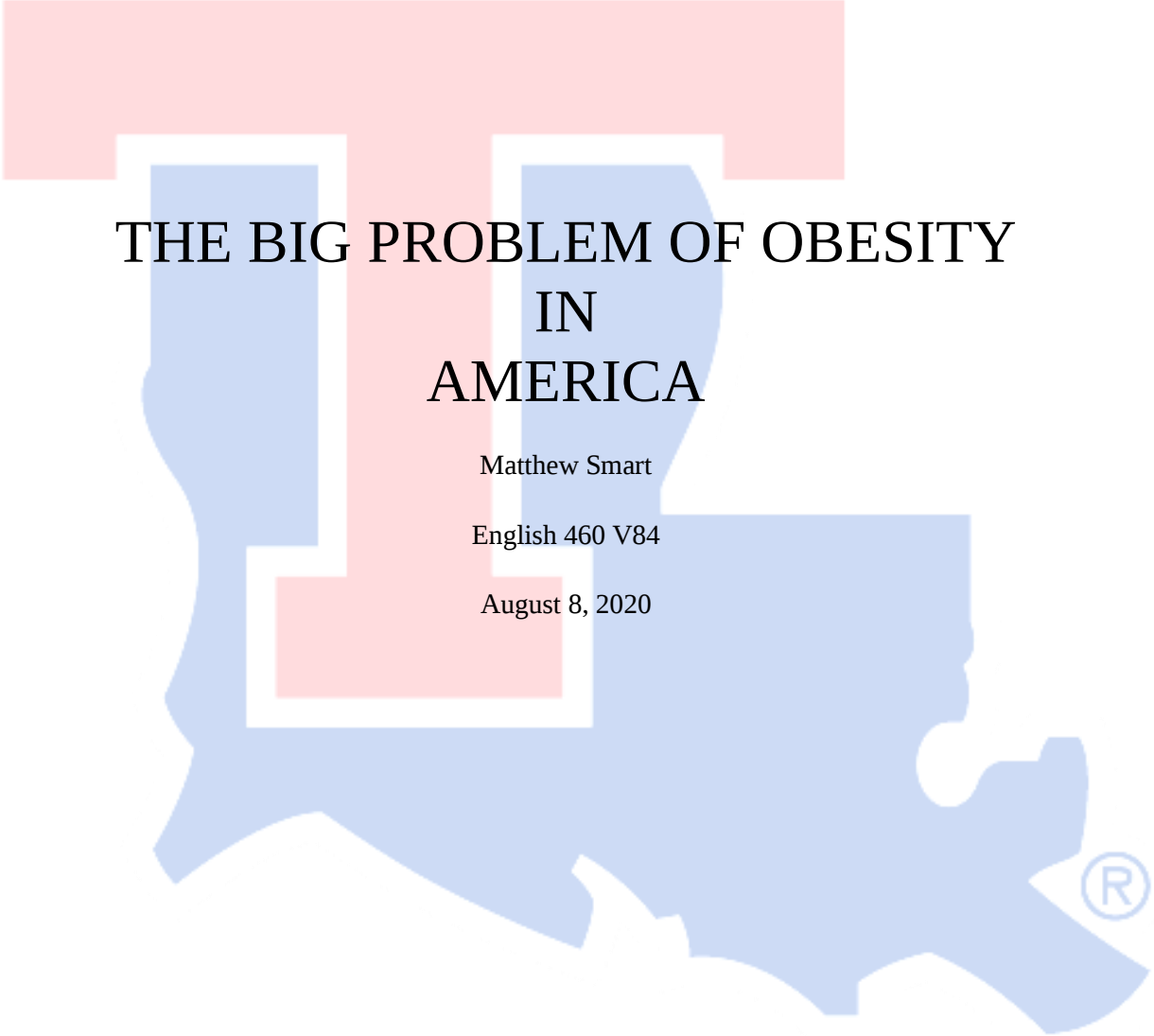
While researching, a change in criteria occurred as new information was gathered in order to form a decision. While safety remained the main criteria, secondary criteria was decided upon as new information was found. I believe these modified criteria better ensures the fulfillment of the best solution.

I look forward to your thoughts on the research and the solution that was recommended from it and I am available to speak further at mrs055@latech.edu.

Sincerely,

Matthew Smart

A handwritten signature in blue ink that reads 'Matthew R. Smart'.



THE BIG PROBLEM OF OBESITY IN AMERICA

Matthew Smart

English 460 V84

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ABSTRACT

“The Big Problem of Obesity in America”

Matthew Ryne Smart

Obesity in American which continues to grow, causing several health risks. Obesity in Americans can be traced back to the diet and lifestyle of an average American, leading to a high level of calorie consumption which often goes unused then to be stored in the body as fat cells. Research was compiled to gain insight on possible dietary solutions. For this report the Ketogenic diet, the Carnivore diet and Intermittent Fasting were considered. While success can be achieved safely through any of these methods if performed correctly and faithfully, additional criteria of flexibility and user friendliness were applied to further develop an effective solution. Through the application of this criteria a recommendation of Intermittent Fasting to aid individuals lower the number of calories consumed, and therefore decrease the size of the fat cells on their bodies was reached. Through a fast that lasts less than twenty-four hours, an individual can decrease the size of their fat cells in a way that is flexible to their lifestyle, easy to understand, and safe giving the individual the highest chance of achievement from the possible solutions researched. While the solution reached can be effective for most individuals, the recommendation reached should not be considered the only solution as weight-loss can differ from other factors.

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Introduction

According to the CDC's crude estimate over 70% of adult Americans suffer from being overweight ("Prevalence of Overweight"), a BMI of 25 to 29.9 with 42.5 of Americans reaching the level of obesity, a BMI over 30 (Hales et al. 1), leading most of the world in one of the highest risk factors for an early death. With obesity comes a host of other health problems such as Hypertension, diabetes, stroke, and different forms of cancers ("The Health Effects").

How and Why Does the Body Gain Weight?

Accumulation of fat on the body can occur in two different ways; through the growth in the size of fat cells, also known as adipose tissue, and the production of fat cells, although the former does not occur after reaching adulthood as adults retain the same amount of fat cells (Spalding et al.). Calories are the source of energy in the human body, converted from proteins, carbohydrates and fats from the food we eat. When these calories are consumed at a rate faster than they can be burned off by the metabolic process of the body, they are converted in fat which is stored in the body.

The ability to store fat has given humans an advantage during evolution, allowing for the development of larger brains compared to other primates who spend most of their time eating vegetation in order to gain enough energy in order to power their bodies (Leonard, Snodgrass, Robertson). "In sum, the ability to effectively detect, metabolize, and store fats likely provided tremendous selective advantages to our hominid ancestors, allowing them to expand into diverse ecosystems around the world" (Leonard, Snodgrass, Robertson).

While evolution can give us an answer on why we as a species have the ability to store excess calories as a fat reserve, genetics determine an individual's likelihood of gaining weight a Harvard article says that "more than 400 different genes have been implicated in the causes of overweight or obesity, although

only a handful appear to be major players. Genes contribute to the causes of obesity in many ways, by affecting appetite, satiety (the sense of fullness), metabolism, food cravings, body-fat distribution, and the tendency to use eating as a way to cope with stress". To put in simpler terms, while our evolution gives us the ability to store fat, our genetics have a larger impact on our day to day lives, making an individual crave certain types of foods, and how their body processes certain foods. ("Why People Become")

Why is obesity increasing in America at such a rate?

It could be because of America's success that we are running into the problem of obesity. Like Europe, the runner up in obesity percentage, America's agriculture and wealth leads to an abundance of available food for consumption and the ability to obtain food while the continents of Africa and Asia are far lower in terms of obesity percentages and overall BMI. It is fair to imply that the success of America which gives American males such a comfortable lifestyle and an abundance of available food that we are now seeing such a rise in obesity throughout the United States.

"Americans are eating more calories on average than they did in the 1970s. Between 1971 and 2000, the average man added 168 calories to his daily fare, while the average woman added 335 calories a day" ("Why People Become"). As stated above, the increase in accumulation of calories without an increase in expenditure in calories leads to an increase in size of fat cells, and then to weight gain.

While the calories we consume have increased the average American's amount of exercise has not followed a similar rising trend. The United States Department of Health and Human Services reports that "[M]ore than 80% of adults do not meet the guidelines for both aerobic and muscle-strengthening activities" and that "Less than 5% of adults participate in 30 minutes of physical activity each day" (Facts & Statistics).

Criteria

Safety will be the first criterion used to judge solutions, which will also be given the highest level of importance. While some solutions can be easy to understand and effective, an unsafe solution is considered undesirable as the health of the individual is the ultimate goal of for losing excess weight.

User Friendliness is the second criterion which will help to determine the best solution. Complexity often leads to confusion. The best solution should be easy for an individual to understand to ensure both effectiveness of the solution as well as safety.

Flexibility is the third and last criterion that will be used. Flexibility, like User Friendliness will increase the likelihood of the longevity of the solution. While a decrease in the fat on the individual's body is important, so is the sustainability of that weight loss is equally as important.

Solutions

There are many diets that become popular over the years as Americans begin to gain more and more weight. Though many 'fad' diets are effective and easy, they are often deemed unsafe by the scientific community and therefore have been excluded from contention. The solutions below have been scrutinized and tested in scientific environments and have been deemed safe, though an individual should consult a doctor to determine the safety of a solution to the individual as different people with different genetics could have adverse reactions from the average person to a certain style of consumption.

The Ketogenic Diet

The Keto diet, also known as a high fat, low carb diet is not new. According to Vera Tweed's *The Ultimate Keto Guide* "The keto diet changes metabolism by shifting the human body's fuel source from

blood glucose to ketones, chemicals the liver makes when fat is burned to generate energy” (Tweed). The effectiveness of Keto can be traced back to flaw the in most American’s diet. As stated above, humans digest calories from three major sources: fat, protein, and carbohydrates. If these sources are balanced correctly then the human body can digest them all effectively, but due to the average American’s diet which contains high percentages of sugar from soft drinks, candy, and additives puts into almost every part of our meals through sauces, marinades and toppings which are converted to carbs which inhibits the body from using fat as a fuel source. Below are two pie charts comparing the average American diet’s to Ketogenic diet in Figure 1 below.

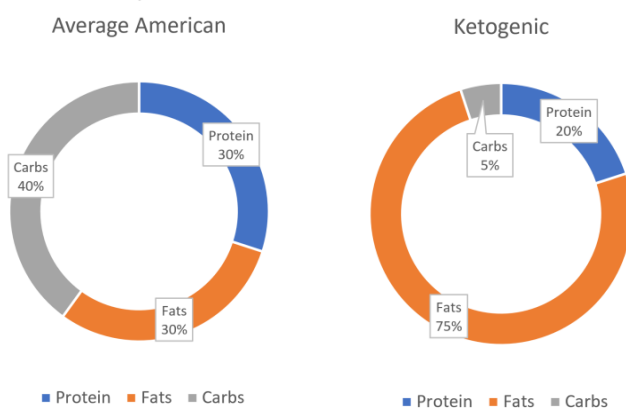


Figure 1 Comparison of Average American Diet to Ketogenic Diet Macronutrients (*Godwin, St. Clair*)

Without an abundance of carbs, the body begins to create ketones (where keto gets its name) from fat. Not only can ketones help to keep down an individual’s hunger, but the body also burns calories by having to make protein and fat into glucose. In short, the keto diet can make an individual burn more calories while also feeling less hungry. (Craig, 848). With individuals feeling less hungry, they are less likely to overeat, leading to less caloric intake.

It is important to note that even though the diet contains guidelines, calorie restriction is still at the core of why the keto diet helps individuals lose weight. “It helps you lose weight, but it does it by calorie restriction, because it helps you regulate your appetite,” says D’Agostino (Tweed).

The Carnivore Diet

The Carnivore Diet is similar to the Ketogenic diet, with one exception, instead of a mixture of proteins, fats, and carbs, individuals on the Carnivore diet only consume protein and fats. “Research shows that eating 25 to 30 grams of protein can help you fill up faster during a meal and feel full for longer after you’ve finished it. So eating only meat may reduce your total caloric intake significantly due to these factors, says Langer, which may lead to weight loss. But just because a diet helps you lose weight doesn’t mean it’s healthy” (Langer). While Langer says that protein can cause an individual to feel more full when using such a diet, it is important that it is not that the individual is eating a certain type of food, but that they are eating less because they feel fuller and less hungry.

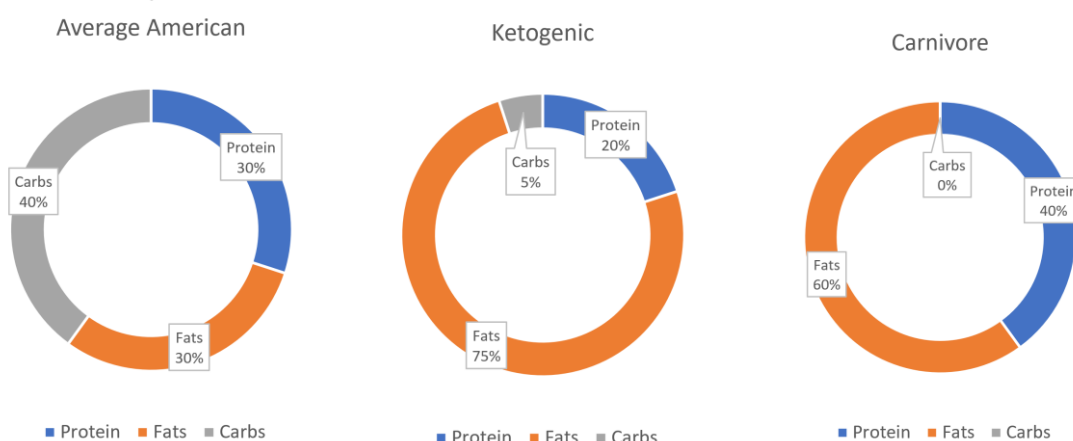


Figure 2 Comparison of Average American Diet to Ketogenic Diet and Carnivore Diet Macronutrients (Godwin, St. Clair)

Fasting diets

Fasting diets are also known as time restrictive diets. Instead of focusing on what individuals eat, the focus is turned toward when they eat. Fasting diets come in many different forms from OMAD (One Meal a Day) to restricting the time that an individual can eat to a certain window throughout the day. No matter which method of fasting is chosen, the philosophy stays the same. The practice of Intermittent Fasting limits the time that you are eating, hopefully limiting how much you eat. It also stands to reason that like the keto diet, if the process of Intermittent Fasting also depletes the reserves of carbs in the body, an individual could begin to generate ketones, receiving the same suppression of hunger.

The One Meal a Day diet is self-explanatory, instead of eating the three meals we have been taught for so long to eat, breakfast, lunch, and dinner, instead only meal is eaten throughout the day. After eating their one meal, individuals would be restricted to only drinking water or coffee for the rest of the day until they reach their only meal for the next day. This diet is preferred by some because of the flexibility of the time they can eat, there is not a restriction on the time to eat, just the occurrences of eating. Another draw to this diet is the time of eating, some with busier work schedules prefer this method as they don't have to take as many breaks to each throughout the day, giving them more time to get their work done.

In restricted window fasting, the individual will be able to eat at any time they would want through the window they have specified. The timeframe that the individual can eat is usually in a multiple of three, either being six, nine, or twelve hours throughout the day. Some practitioners of this eating schedule do not eat for 24 to 72 hours though the Hopkins Medical Institute warns that these prolonged periods without caloric intake can be harmful. ("Intermittent Fasting: What"). For the concerns of this paper, only fasting periods under 24 hours will be considered.

Conclusions

The Ketogenic Diet

Against the criteria of flexibility and user friendliness the Ketogenic diet does not stack up well. While many people have seen success while on the Ketogenic diet, the diet relies on a set of specific types of calories in order to enter and maintain the state of ketosis, causing a sort of learning curve when starting the diet. For most Americans, relying on managing macronutrients in such a way can be cumbersome and lead to them either not performing the diet correct, not reaching ketosis or not receiving proper nutrients.

The Carnivore Diet

Unlike the Ketogenic diet the Carnivore diet is much simpler. Instead of maintaining a balance of certain macronutrients, the types of calories, there is a concentration of exclusion of carbs from the individual's diet instead of eating only a select amount. The Carnivore diet also does not rely on entering a certain state in order to burn fat as the weight loss in the Carnivore diet is achieved from the fullness brought on by the protein and fat which is consumed.

Intermittent Fasting

Intermittent fasting offers the most flexibility as well as user friendliness as long as there is at least one eating period every 24 hours as anything over 24 hours could be deemed unsafe. Time restricted eating is user friendly in the way that it does not rely on eating a certain amount of different macronutrients, an individual can consume carbs, proteins and fats in any combination they desire as long as they stay within the time window they have selected.

Recommendation

As stated in the conclusion, consuming less calories than the calories your body is using is going to cause a loss in fat. Through the research done, my recommendation to consume less calories throughout the day is a form of intermittent fasting, primary the One Meal a Day Plan. This plan would grant the highest about of safety, flexibility and user friendliness.

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