

# A Light Lunch? A Case in Calorie Counting

by

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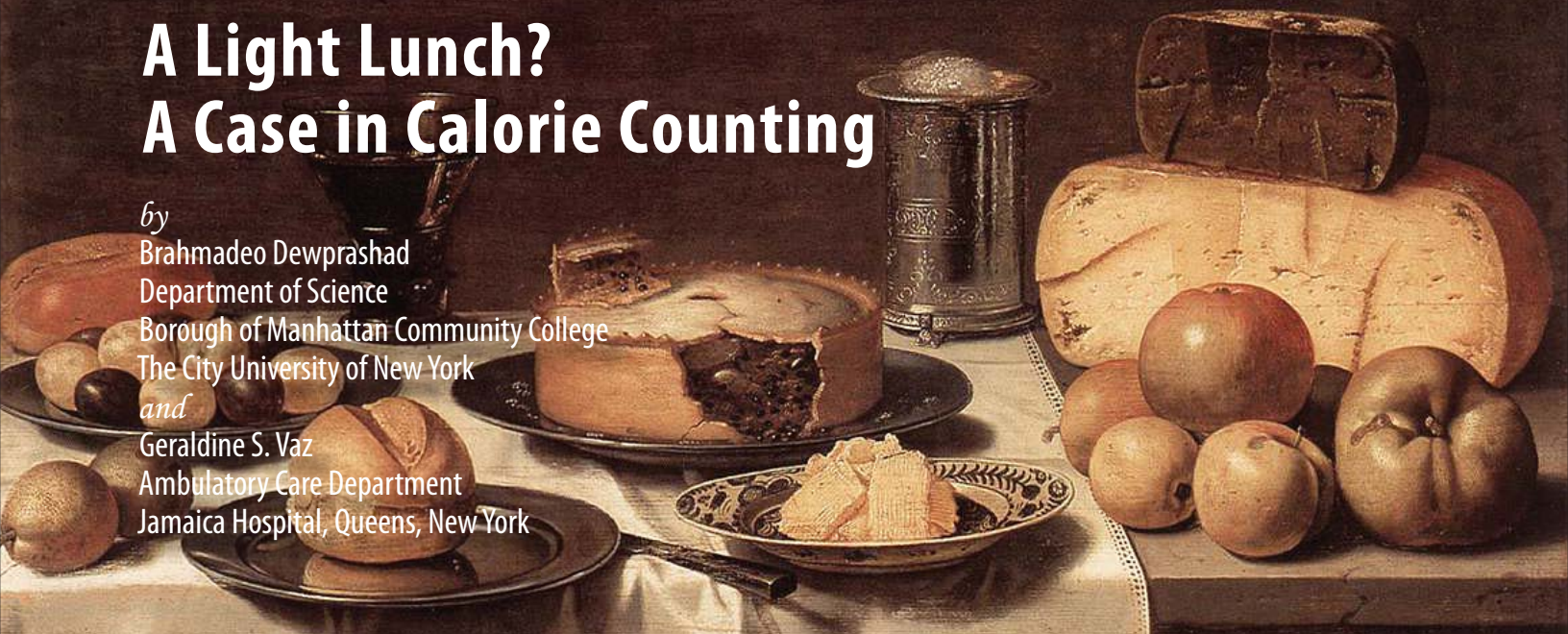
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## Before Class

- A. Read the following case study.
- B. Locate and read the following article:  
United States Department of Health and Human Services and United States Department of Agriculture. 2005. *Dietary Guidelines for Americans 2005*.  
<http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2005/2005DGPolicyDocument.pdf>
- C. Complete the Pre-Case Study assignment individually and submit two weeks prior to undertaking the case study in class. The assignment will be graded and returned to you at least a week before you undertake the case study. Also, attempt answering the case study questions as you will be required to share your responses with group members during the in-class case study session.

## In Class

- D. Work in your assigned group and formulate responses to the case study questions. Select a team member to moderate the discussions.

## After Class

- E. Complete the Post-Case Study questions and submit along with an individual write-up of answers to the case study questions.

## The Case

“Look at this pair of jeans. Don’t you think I will look good in it?” asked Elizabeth.

“They suit you. Go try them on, girl,” encouraged Charonda.

Elizabeth went into the changing room. She emerged a few minutes later wearing a pair of jeans that was unbuttoned and clinging to her body. “What do you think?” she asked.

“Nice... Maybe a bigger size, though. Everyone is now going for baggy clothes,” Charonda suggested diplomatically.

“No, this is my size! I’ll lose a few pounds and they’ll fit perfectly,” Elizabeth countered adamantly.

“OK, take them. Anyway, I’m getting hungry, let’s grab something to eat,” Charonda suggested.

“There is a place next door we can get something quick. Let’s have a light lunch so that we can pig out at Duane’s party tonight. I just love the Caribbean food he serves!” Elizabeth replied.

“I’ll order. What do you want?” Charonda asked.

“I love cheeseburgers! I gotta watch my weight and my cholesterol level now. Looks like the pounds came on over winter. What are you having? I’ll follow your example, skinny girl,” Elizabeth observed.

“Two slices of cheese pizza, a large garden salad, and an iced tea,” Charonda replied.

“A diet ice tea, I bet,” remarked Elizabeth.

“Nah, artificial sweeteners taste awful,” Charonda replied.

“Yeah, nothing like the real stuff. I’ll have the same, but I like spicy. Two slices of pepperoni pizza, a taco salad, and a grape soda for me. I love ranch dressing, but don’t bring any for me ... too many calories,” Elizabeth requested.

As they sat down to eat, Elizabeth looked around at the other diners and observed. “Crowded huh; salads seem to be popular today.”

“Yeah, that time of the year. Doesn’t hurt to lose the few pounds gained over winter—swimsuit season coming up,” Charonda opined.

“Looks like I have to do that too. You know, I tried several times to lose weight but it is so hard,” confessed Elizabeth.

“Yeah, I know it’s tough,” agreed Charonda.

“Look at that lady with the two kids in the corner table. Her plate is loaded with fried chicken and fries and she is so thin. Some people can load up on fats and never put on weight,” observed Elizabeth.

“For class I was reading that we all have different metabolic rates; our hormone levels, weight, muscle mass, age and other factors determine how many calories we burn. To keep the same weight we have to eat about the same amount of calories we burn up. Calories are not the only thing to watch. You do watch your cholesterol intake and that’s great. Trans fats and saturated fats aren’t good either. Although that lady is skinny, the fried chicken and fries are not healthy choices, they have lots of saturated fats and maybe even trans fat,” Charonda counseled.

Elizabeth nodded in agreement and then shifted the conversation to news about mutual friends during the rest of the meal. All the talk about diet and calories was making her feel depressed.

“That was good,” Charonda observed as they got up to leave.

Elizabeth complained. “Yeah. You know, I wish I had as high a metabolic rate as you. Then I could enjoy food like you do. We eat about the same amount but I’m so much bigger than you. I always feel guilty after I’ve eaten something that I really love.”

“Don’t worry so much. We walked for about thirty minutes in the mall. I am sure we burned up about half of the calories we just ate,” Charonda opined.

“We walked more like forty minutes. I bet we burned up all the calories we ate. We should come to the mall and window shop more often. It is much more fun than working out in a gym,” said Elizabeth.

Later that evening, Elizabeth was unpacking her shopping bag and decided to try on the jeans once again. She inhaled deeply and contracted her stomach as she cautiously put the jeans on. They still didn’t fit! She gave them an upwards tug and exhaled in relief as the jeans moved up to her waist. However, despite all her efforts, she could not button them. She wondered how much weight she had put on since she last weighed herself. She unearthed the bathroom scale, climbed on it, and closed her eyes as she saw the needle racing across the scale. After a while, she opened her eyes and peered down at the needle. She exhaled in relief as it settled at the 200 lb mark. She plucked up enough courage to measure her waist. Her jaw dropped as she noticed the measurement.

“Ninety one inches? Can’t be!” she exclaimed. As she looked closely, she noticed she had used the side of the tape that gave measurements in centimeters. She sighed in relief, turned over the tape, and re-measured her waist.

“Aha! Thirty four inches; not bad for someone who is 5 feet 4 inches and has a big bone structure. But I still have to lose a few pounds. I’ll give up sugar from my diet until I lose 20 pounds, starting tomorrow. Tonight though is time for jerk chicken and rum cake!”

### Pre-Case Study Questions

1. Provide a very brief explanation of the following terms: (a) carbohydrate, (b) protein, (c) fats, (d) saturated fats, (d) trans fats, and (e) cholesterol.
2. The foods that we eat provide energy for the body. The energy value is usually measured in Calories (Cal), calories (cal), kilocalorie (kcal), and kilojoule (kJ). What is the relationship between these units?

### Case Study Questions

1. Use the information below to determine the amount of Calories in the food consumed by Elizabeth and Charonda. Did Elizabeth follow Charonda’s example and consume a similar amount of calories during their “light” lunch? The caloric values of carbohydrates, fats, and proteins are 17, 38, and 17 kJ/g, respectively and 1 Calorie (Cal) = 4.184 kJ.

Menu item	Elizabeth’s lunch			Charonda’s lunch		
	<i>Pizza with pepperoni</i>	<i>Taco salad</i>	<i>Grape soda</i>	<i>Cheese pizza</i>	<i>Garden salad</i>	<i>Iced tea</i>
Amount	2 slices (142 g)	1 serv. (261g)	12 fl oz (372g)	2 slices (126 g)	1.5 cup (224g)	1 cup (8 fl oz)
Carbohydrate	39.8 g	26.6 g	41.7 g	41.0 g	6.7 g	20.4 g
Protein	20.2 g	17.4 g	0 g	15.4 g	2.6 g	0 g
Saturated Fat	4.4 g	6.0 g	0 g	3.0 g	0.0 g	0.1g
Polyunsaturated Fat	2.4 g	1.5 g	0 g	1.0 g	0.1	0.6g
Monounsaturated Fat	6.2 g	4.5 g	0 g	2.0 g	0 g	0 g
Cholesterol	28 mg	5 mg	0 mg	19 mg	0 mg	0 mg

2. Elizabeth is 200 lb and Charonda is 150 lb. An average person of 150 lb walking at a rate of 2 miles per hours burns about 240 Calories per hour while an average person of 200 lb burns about 320 Calories per hour. Did either Elizabeth or Charonda “burn off” the Calories consumed with the walk they took? Assume that they walked at an average speed of 2 miles per hour for 40 minutes.

3. For a female aged 19–30 with a sedentary lifestyle such as Elizabeth and Charonda, the estimated daily calorific need is 2000 Calories. What percentage of this did they consume during lunch? Would you recommend a very large dinner for them if they wanted to restrict themselves to their calorific needs and they each had a breakfast of about 600 calories?
4. The body mass index (BMI) of an individual is used as an indication of weight-related health risks and is defined as weight in kilograms divided by height, in meters, squared. BMIs of 24 or less, 25–29.9, and 29.9 or over, respectively, indicate healthy weight, overweight, and obesity. In which category will you place Elizabeth?
5. How much weight does Elizabeth need to lose in order to be at a healthy weight?
6. Elizabeth has a sister Mary who has the same height and weighs 205 lb. However, Mary, who ran track in high school, is much more muscular. Elizabeth considered giving the pair of jeans to Mary. However, she decided not to because she felt that the jeans would probably not fit Mary since she likely had a larger waist size than Elizabeth because although they had the same height, Mary was heavier than her. Calculate Mary's BMI. What do you think about Elizabeth's assumption about Mary's waist size?
7. A waist size >35 inches in females is associated with obesity related health risks. Fat located in the abdominal region is associated with a greater health risk than peripheral fat. What conclusions can you draw about Elizabeth's waist measurements?
8. It is recommended that one consume less than 10 percent of calories from saturated fats. Does the saturated fat content of the meal consumed by Elizabeth fall within these guidelines? The caloric value of fats is 38 kJ/g, and 1 Calorie (Cal) = 4.184 kJ.
9. It is recommended that one consume less than 300 mg/day of cholesterol. Is the amount of cholesterol in Elizabeth's meal at an acceptable level?

### Post-Case Questions

1. According to the U.S. Department of Agriculture (USDA), the average American consumes about 20 teaspoons of sugar that have been added to products such as cereals, soda, coffee, ketchup etc. Make a list of all the food that you have eaten over a school day and estimate the amount of calories that you obtained that day from the sugar added to the food that you have eaten. When computing the calories, bear in mind that one teaspoon of sugar has 16 calories and that sugar is a carbohydrate and thus has a calorific value of 4 Calories/g. Manufactured food products are usually labeled with the amount of sugar in the product. How does your added sugar intake for that day compare with that of the average American?
2. A reduction of 500 Calories or more per day is a common initial goal in most weight loss programs. How many teaspoons of sugar would Elizabeth have to cut back on in order to reduce her intake by 500 Calories per day? What do you think of Elizabeth's plan to remove sugar from her diet in order to lose weight?
3. What advice would you give to Elizabeth about the health risks associated with her weight?



Image credit: *Breakfast* by Floris Gerritsz. van Schooten (b. ca. 1590, Haarlem, d. after 1655, Haarlem), oil on panel, 50 × 82 cm, Koninklijk Museum voor Schone Kunsten, Antwerp.

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