

## 20.18: Chocolate and Body Weight

### Learning Objectives

- To study chocolate's healthful metabolic mechanisms

### Research conducted by

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### Overview

Recent research has brought to light the beneficial health effects of chocolate. Studies have linked chocolate with lower blood pressure, lower bad cholesterol, improved insulin sensitivity, and reductions in the risks of diabetes, heart disease, and stroke. The authors of this study hypothesized that chocolate's healthful metabolic mechanisms might also reduce fat deposition in spite of its high caloric content.

This study used the baseline data from a clinical study that examined noncardiac effects of cholesterol-lowering drugs in healthy adults. The baseline data included body mass index (BMI), chocolate consumption frequency, age, sex, physical activity frequency, depression, and some dietary variables. Chocolate consumption frequency was assessed with the question: "How many times a week do you consume chocolate?" Dietary intakes of total calories, fruits and vegetables, and saturated fat were assessed with a validated food frequency questionnaire. A food frequency questionnaire is a limited checklist of foods and beverages with a frequency response section for subjects to report how often each item was consumed over a specified period of time. Depression was measured with a validated scale related to mood. BMI is a measure of body fatness that is associated with many adverse health conditions.

### Questions to Answer

What can we conclude from the researchers' findings that there is an association between consuming chocolate frequently and lower BMI? How do we interpret regression models?

### Design Issues

The authors used baseline data from an unrelated clinical study examining noncardiac effects of cholesterol-lowering drugs. That clinical study included men ranging in age from 20 to 85 years, but only postmenopausal women. The results of the chocolate study cannot, therefore, be generalized to younger adult women. Except for BMI, the data for all of the study variables were "self-reported" by the subjects via questionnaires. The assessment of critical variables, such as chocolate consumption frequency and vigorous physical activity frequency, could differ when using different measurement tools. The study was cross-sectional in nature, precluding conclusions about causation.

### Descriptions of Variables

Table 20.18.1: Description of Variables

VARIABLE	DESCRIPTION
BMI	Body mass index, calculated as: $(\text{weight in kilograms}) / (\text{height in meters})^2$
Chocolate consumption frequency	Number of times per week a subject consumed chocolate
Calories	Overall calorie intake of a subject determined via food frequency questionnaire

Age	Range of 20 to 85 years, postmenopausal if female
Sex	68% male, 32% female
Activity	Number of times per 7-day period a subject engaged in vigorous physical activity for at least 20 minutes

## Links

Golomb et al. article

Rose et al. article

What is body mass index (BMI)?

## References

- Golomb, B. A., Koperski, S., White, H. L. (2012). Association between more frequent chocolate consumption and lower body mass index. Archives of Internal Medicine, 172, 519-521.
- Rose, N., Koperski, S., Golomb, B. A. (2010). Mood food: chocolate and depressive symptoms in a cross-sectional analysis. Archives of Internal Medicine, 170, 699-703.

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