

Rowan University

## Rowan Digital Works

---

Stratford Campus Research Day

26th Annual Research Day

---

May 5th, 12:00 AM

# Impact of Body Mass Index and Body Fat Percentage on Subjective Weight Status

Kelly Staples  
*Rowan University*

Adarsh Gupta  
*Rowan University*

Follow this and additional works at: [https://rdw.rowan.edu/stratford\\_research\\_day](https://rdw.rowan.edu/stratford_research_day)



Part of the [Other Analytical, Diagnostic and Therapeutic Techniques and Equipment Commons](#), and the [Psychological Phenomena and Processes Commons](#)

Let us know how access to this document benefits you - share your thoughts on our [feedback form](#).

---

Staples, Kelly and Gupta, Adarsh, "Impact of Body Mass Index and Body Fat Percentage on Subjective Weight Status" (2022). *Stratford Campus Research Day*. 69.

[https://rdw.rowan.edu/stratford\\_research\\_day/2022/May5/69](https://rdw.rowan.edu/stratford_research_day/2022/May5/69)

This Poster is brought to you for free and open access by the Conferences, Events, and Symposia at Rowan Digital Works. It has been accepted for inclusion in Stratford Campus Research Day by an authorized administrator of Rowan Digital Works.



OSTEOPATHIC MEDICINE

# Impact of Body Mass Index and Body Fat Percentage on Subjective Weight Status

Kelly M. Staples, MBS; Adarsh Gupta, D.O., M.S., F.A.C.O.F.P.



Center for Medical Weight Loss and Metabolic Control, Rowan School of Osteopathic Medicine Stratford, NJ 08021

## Abstract

- In the United States, the prevalence of obesity in adults is 42.4% of the population
- Body mass index (BMI) is the most frequently used tool to screen and assess for obesity
- BMI fails to account for body composition and body fat percentage (BFP).
- The objective of our study is to assess for understanding of BMI, BFP, and how these two measures are related to self-perception of body mass.
- Findings showed positive correlations between BMI, gender, and perception of body figure

## Background

- The obesity epidemic impacts roughly 140,000,000 American adults
- Increased body mass increases the risk of chronic medical conditions including diabetes, heart failure, hypertension, and stroke.
- Current standard practice recommended by the USS Preventive Services Task Force (UPSTF) suggests screening for obesity in all adults using the body mass index (BMI) scale (Table 1).
- BMI does not consider body composition, which includes body fat mass, lean body mass, and body water
- Body fat percentage (BFP) has been reported as a potential alternative to BMI
- BFP reflects the distribution of body fat as well as total body composition (see Figure 1)

### AAFP Category BMI

Underweight	<18.5
Normal	18.5-24.9
Overweight	25 -29.9
Class 1	30 34.9
Class 2	35 39.9
Class 3	>40

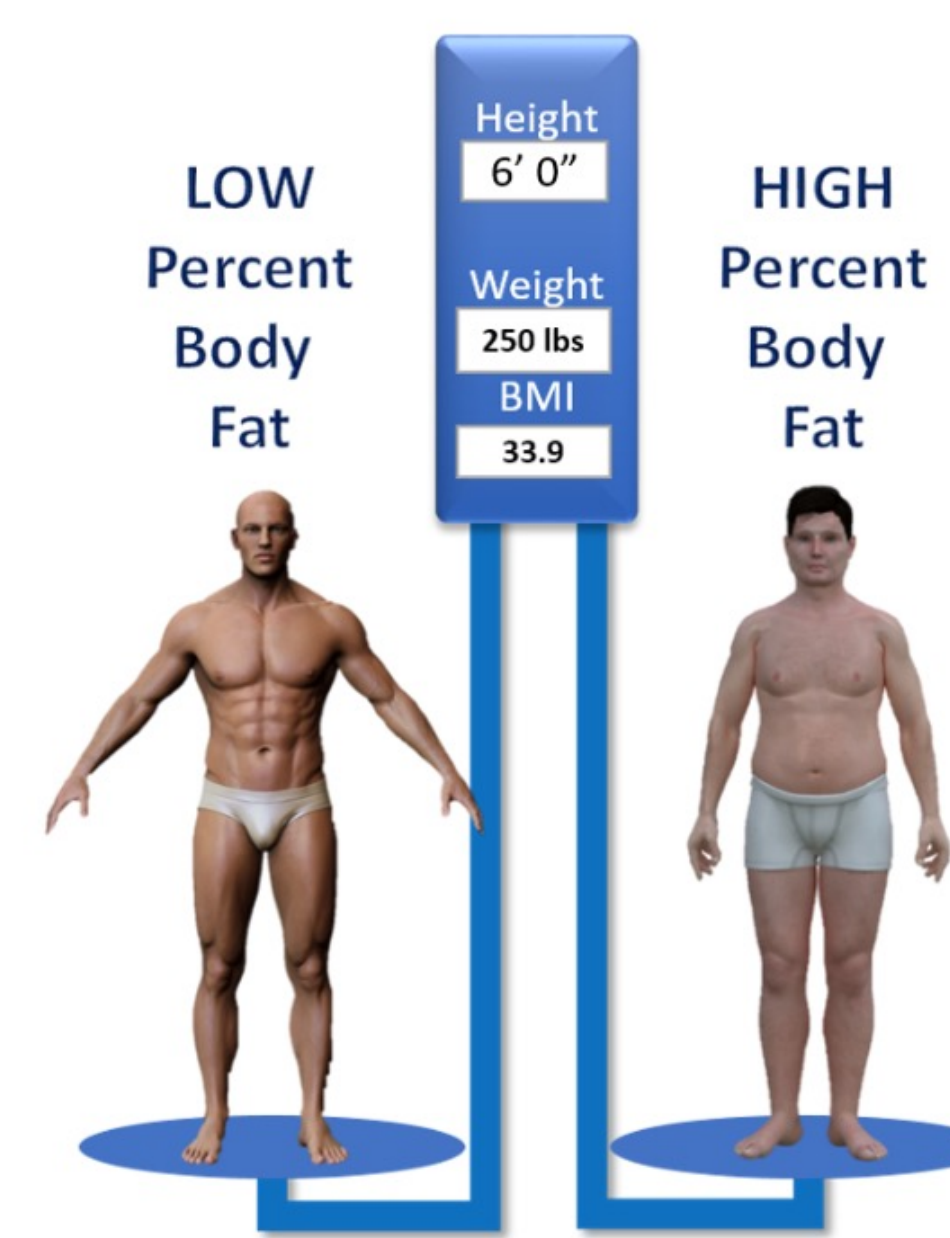


Figure 1 Representation of the difference between low BFP and high BFP in two adult males with the same height, weight, and BMI.

## Objectives

In this study, we aim to add to the ongoing literature by assessing both the understanding of BMI versus BFP, as well as gauging the relation between body weight and self-perception of body habitus. Our goal is to close thus the gap in the current knowledge of the public perception of the differences between BMI and BFP and further elucidate the use of BFP and self-perception of body weight as tools to combat the growing obesity epidemic in the United States.

## Conclusion

While it is current practice to use BMI to screen and classify weight status, BMI does not consider body composition and is a poor indicator of overall health compared to body fat percentage. Results show there is a strong relationship between BMI, gender, and self-perception of body habitus. Additionally, there is lack of understanding of the difference between BMI and BFP in relation to long-term health outcomes. Thus, there is a need for public education on the differences of BMI and BFP, and further how these two scales reflect health status.

## Acknowledgments

We would like to acknowledge Dr. Robert Steer for his assistance with data analysis and feedback.

Thank you to the Rowan SOM SMRF program for the opportunity to create an individual research project.

## References

1. Hales, M., & Carroll, M. D. (2021, February). Prevalence of Obesity and Severe Obesity Among Adults: United States, 2017–2018. Retrieved from Center for Disease Control and Prevention: <https://www.cdc.gov/nchs/products/databriefs/db360.htm>
2. USS Preventive Services Task Force. Screening for and management of obesity in adults. *Ann Intern Med*. 2012;157(5):373-378.
3. Pasco JA, Nicholson GC, Brennan SL, Kotowicz MA (2012) Prevalence of Obesity and the Relationship between the Body Mass Index and Body Fat: Cross-Sectional, Population-Based Data. *PLOS ONE* 7(1): e29580. <https://doi.org/10.1371/journal.pone.0029580>
4. Stunkard A, Sorensen T, Schulsinger F (1983) Use of the Danish Adoption Register for the study of obesity and thinness. *Research Publications - Association for Research in Nervous & Mental Disease* 60: 115–120.

## Materials and Methods

Participant Recruitment

- 21 question survey was created on Qualtrics
- Administered to participants at Rowan Family Medicine Department – Stratford, Mount Laurel, Washington Township, and Hammonton

Questionnaire

- Demographics, height and weight, and assessment of familiarity and understanding of BMI and BFP using a Likert scale

Statistical Analysis

- Correlation and frequency analyses using SPSS Statistics

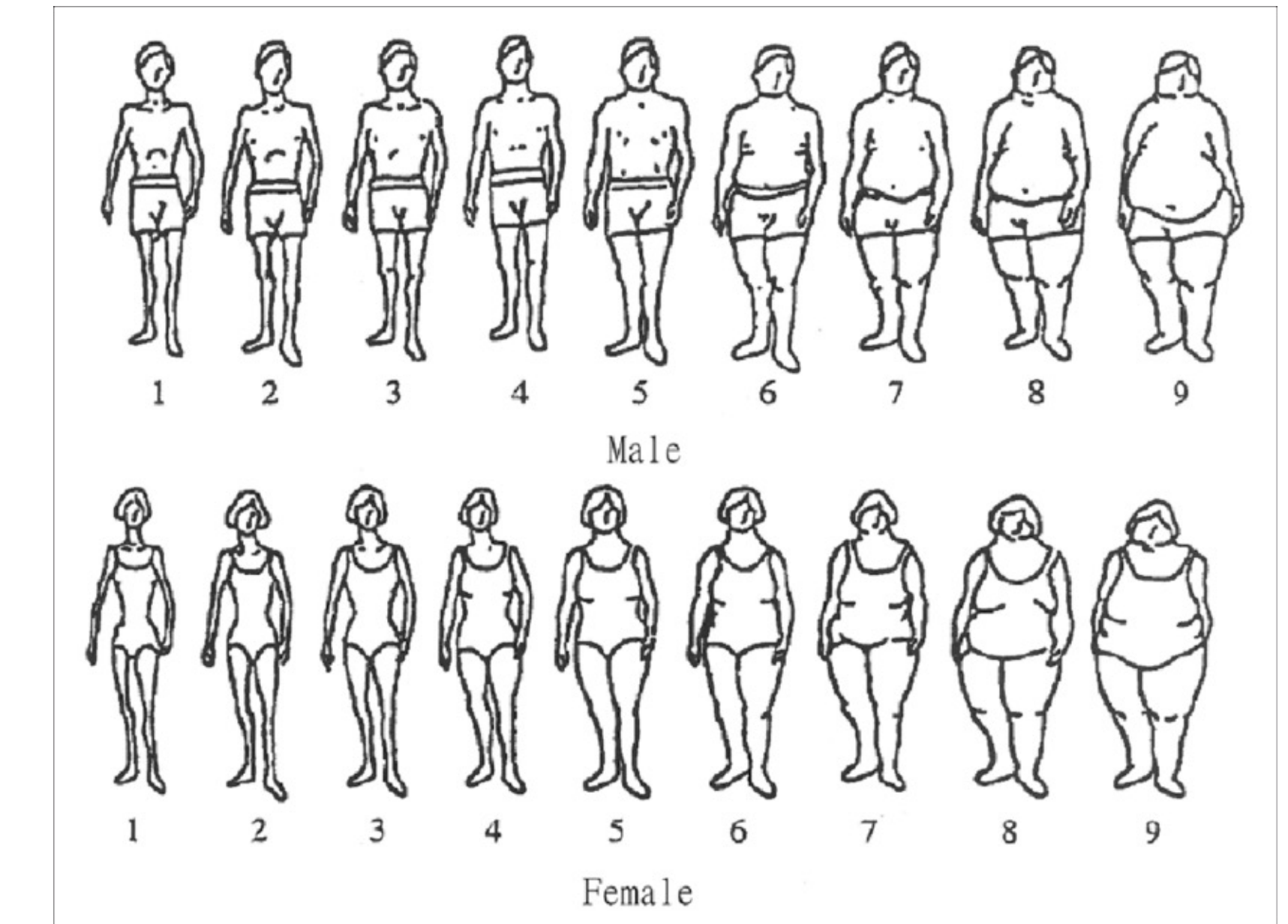


Figure 1 Stunkard Scale (4)

## Results

- Average BMI of the sample was 26.5 characterizes in the overweight category
- Significant correlations between BMI, gender, and subjects' visual perception of their weight on Stunkard scale  $r(96)=.833, p<.001$
- When controlled for gender, correlations remained strong  $r(96)=.828, p<.001$
- Those who were familiar with BFP were more likely to understand the difference between BMI and BFP  $r(96)=.736, p<.001$
- Participants who felt that BMI is synonymous with BFP also were found to believe that reducing BMI was better than reducing BFP for long term health

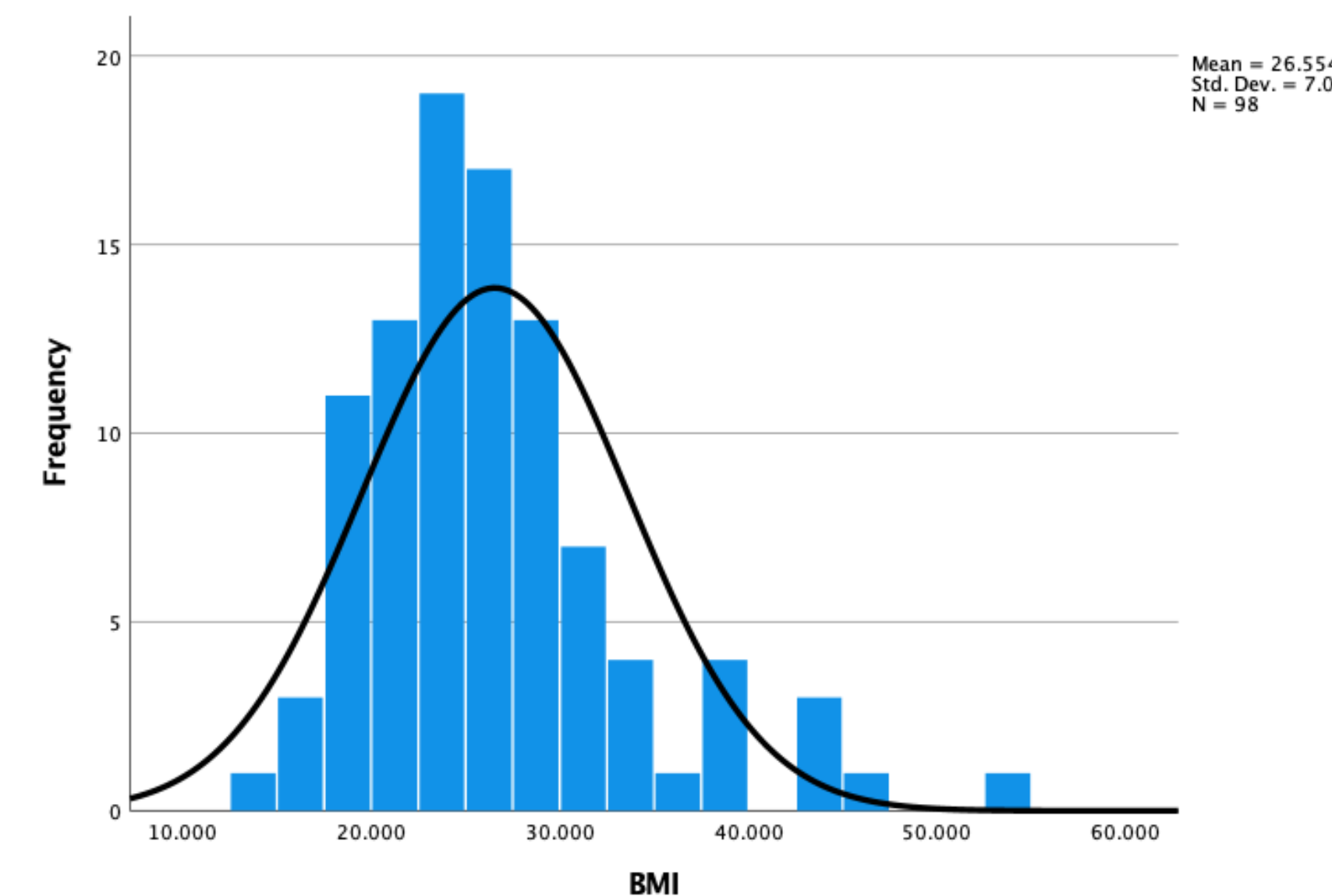


Figure 3: Histogram showing BMI with normal curve distribution

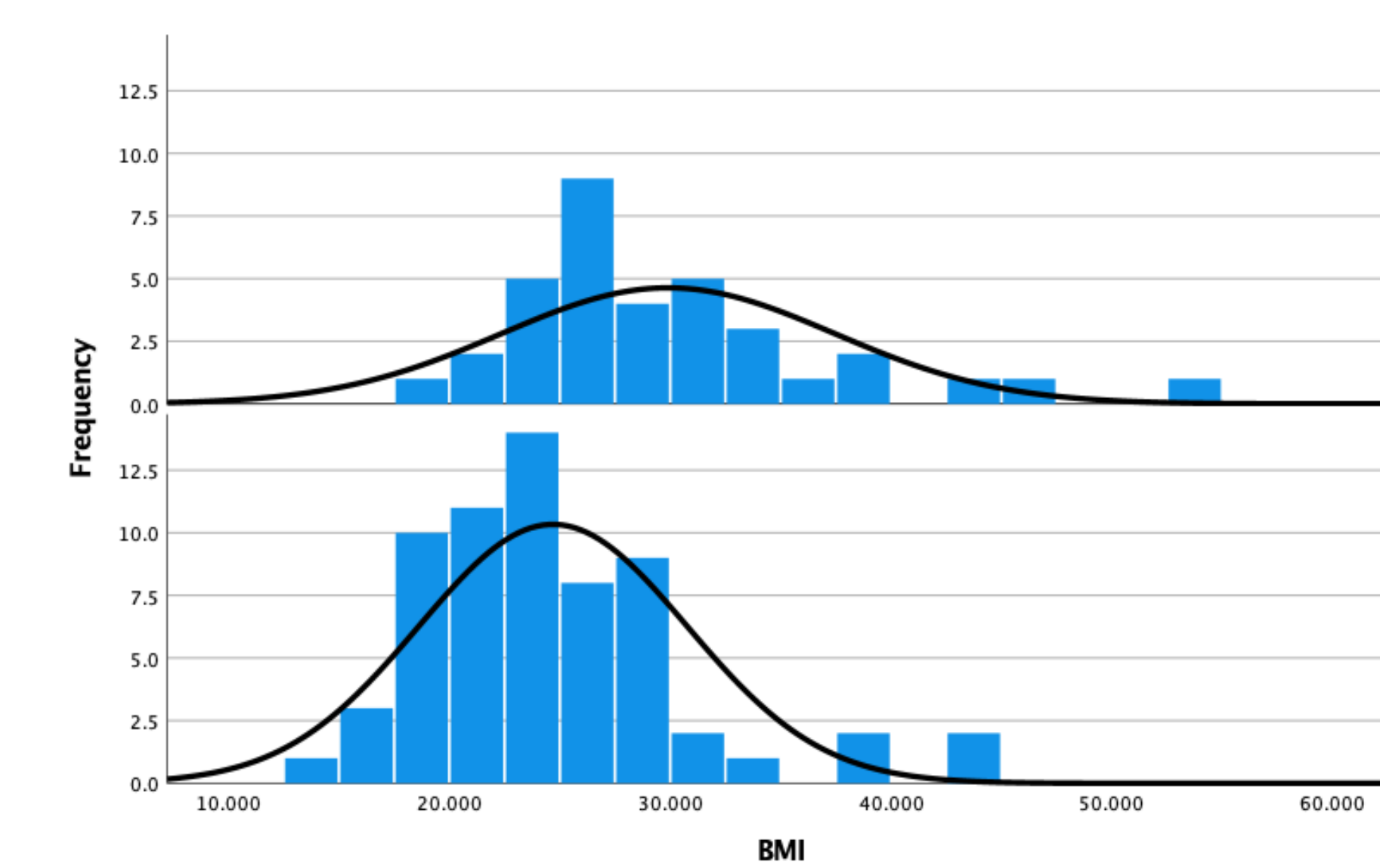


Figure 3: Histogram of BMI broken down into men (0) and women (1) with normal distribution

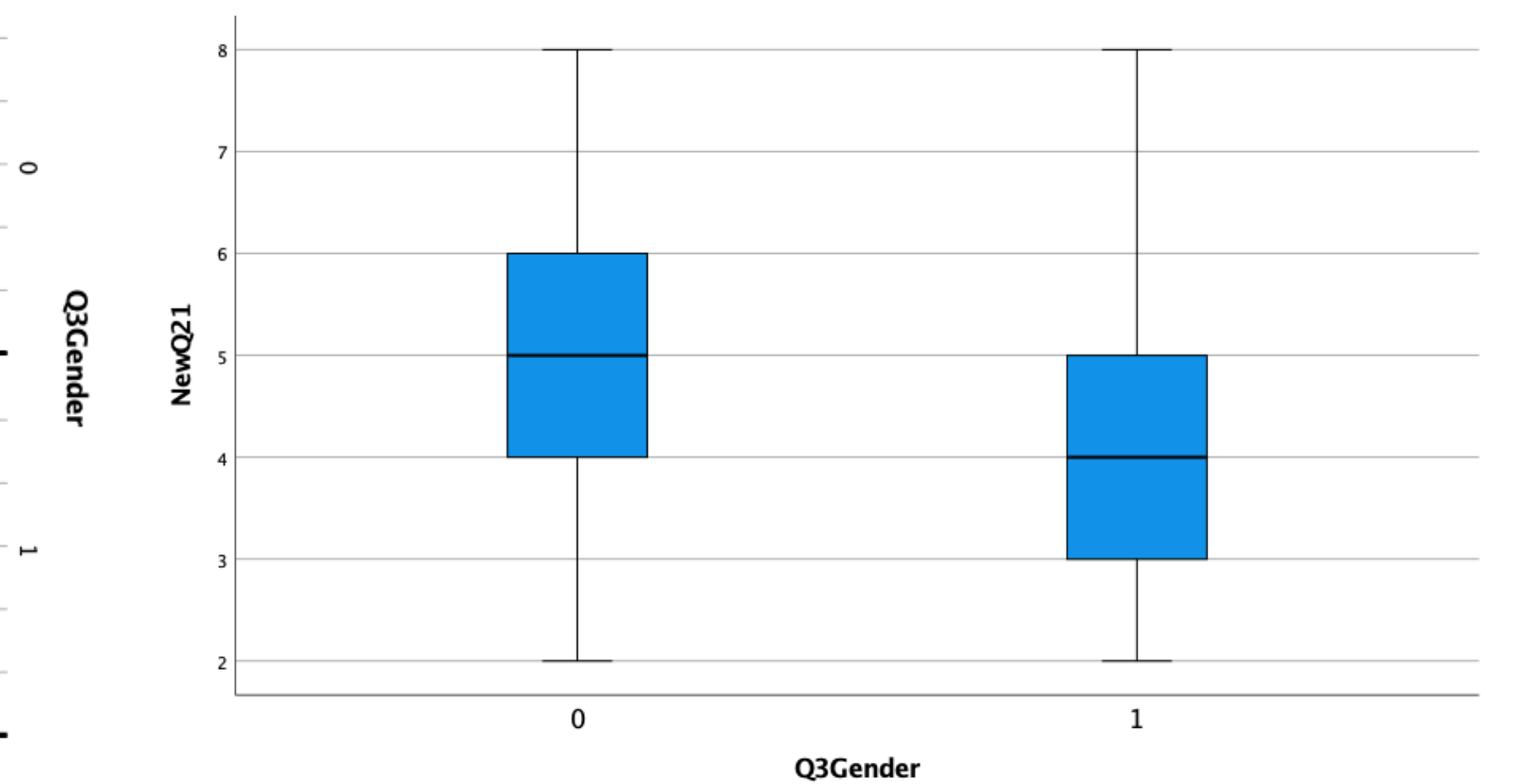


Figure 3: Stem and leaf plot of answers to Stunkard Scale by gender male (0) and female (1)