Aim: Recording of Body Mass Index (BMI)

Reference:

Centers for Disease Control and Prevention (CDC). (2022). About Adult BMI. Retrieved from CDC website

World Health Organization (WHO). (2020). Body Mass Index – BMI. Retrieved from WHO website

National Institutes of Health (NIH). (2021). Assessing Your Weight and Health Risk. Retrieved from NIH website

American Heart Association (AHA). (2023). Understanding Body Mass Index (BMI). Retrieved from AHA website

Objective:

To understand and accurately measure the Body Mass Index (BMI) of individuals and interpret the results based on standard BMI categories.

Materials Needed:

1. Digital or mechanical weighing scale

2. Stadiometer or a measuring tape

3. Calculator (optional)

4. Data recording sheets

Procedure:

1. Measurement of Height:

- Ensure the subject removes shoes and stands upright against a wall.

- Use a stadiometer or measuring tape to measure the height.

- The subject's heels should be together, and the back should be straight, with the head in the Frankfort horizontal plane (looking straight ahead).

- Record the height to the nearest centimeter (cm) or meter (m).

2. Measurement of Weight:

- Ask the subject to remove heavy clothing and shoes.

- Use a digital or mechanical scale to measure the weight.

- Ensure the scale is calibrated and placed on a flat surface.

- Record the weight to the nearest kilogram (kg).

3. Calculation of BMI:

- BMI is calculated using the formula:

$$BMI = Weight\ (Kg) / Height\ (m)^2$$

- If the height is measured in centimeters, convert it to meters by dividing by 100.

4. Interpretation of BMI:

- Use the following standard categories to interpret the BMI:

- Underweight: BMI < 18.5

- Normal weight: BMI 18.5–24.9

- Overweight: BMI 25–29.9

- Obesity: BMI ≥ 30

Sample Calculation

Let's go through the steps to calculate the BMI for a hypothetical subject:

Subject Details:

- Height: 165 cm

- Weight: 68 kg

Steps:

1. Convert Height to Meters:

- Height in cm: 165 cm

- Convert to meters:

$$Height\ (m) = 165\ cm / 100 = 1.65$$

2. Use the BMI Formula:

- Weight in kg: 68 kg

- Height in m: 1.65 m

- BMI formula:

$$BMI = Weight\ (Kg) / Height\ (m)^2$$

- Substitute the values:

$$BMI = 68kg / (1.65m)^2$$

- Calculate the height squared:

$$(1.65\ m)^2 = 1.65 \times 1.65 = 2.7225\ m^2$$

- Calculate the BMI:

$$BMI = 68 / 2.7225 \approx 24.98$$

3. Interpret the BMI:

- Based on the standard BMI categories:

- Underweight: BMI < 18.5

- Normal weight: BMI 18.5–24.9

- Overweight: BMI 25–29.9

- Obesity: BMI ≥ 30

- The calculated BMI is approximately 24.98, which falls within the "Normal weight" category.

Sample Data Table Entry:

Subject ID	Height (cm)	Weight (kg)	Height (m)	BMI (kg/m²)	Category
006	165	68	1.65	24.98	Normal weight

Steps for Data Collection:

1. Create a table similar to the sample data table above.

2. Measure and record the height and weight of each subject.

3. Calculate the height in meters if recorded in centimeters.

4. Use the BMI formula to calculate each subject's BMI.

5. Classify each subject into the appropriate BMI category based on their calculated BMI.

Safety and Ethical Considerations:

- Ensure the privacy and confidentiality of subjects' personal data.

- Obtain informed consent from subjects before measuring their height and weight.

- Ensure the equipment is sanitized between uses to maintain hygiene.

- Handle all data sensitively, respecting the dignity of all participants.

Conclusion:

Accurately recording and interpreting BMI is crucial for assessing the health and nutritional status of individuals. This practical exercise helps in understanding the process of measuring BMI and its significance in health and medical assessments.