## Obesity Assessment in Adults

Obesity is considered a disease hence its increase leads to the declaration of a pandemic. Overweight and obesity pose health risks for individuals such as diabetes, hypertension, and cardiovascular disease. It also poses risk for public health because it requires constant resources to manage chronic diseases that are an effect of obesity and overweight. Obesity is prevalent in both children and adults with the former having more risks due to increased screen time and reduced playtime and poor nutrition. Obesity is defined as having excess fat accumulation in the body that lowers the quality of life (Ref-A1B2C3). Obesity causes chronic diseases which increase the burden of healthcare while obesity can be prevented through a healthy diet and physical activity. Therefore, diagnosis of obesity is essential in diagnosing risk factors and surveillance to prevent other conditions like diabetes. Body Mass Index (BMI) is one of the assessments used in the diagnosis of obesity. BMI measures fat accumulation in the body hence establishing excess of body fat in the body which is a risk factor for obesity. However, the validity, reliability, and limitations of BMI may pose a challenge in the diagnosis of obesity.

Body Mass Index is one of the anthropometric measures of obesity widely used in a clinical setting for its simplicity. Piqueras Fiszman et al. (2021) argue that BMI is an indirect measure of obesity and is used because it is fast and less expensive. The objective of assessing obesity is for clinical diagnosis of the disorder and surveillance. According to Cetin (2016), BMI is the measure of body weight in relation to an individual’s height. It is calculated by measuring the weight of an individual in Kilograms and dividing it by the square of an individual’s height in m. Bodyweight is measured using a weighing scale which should be well-calibrated to reduce errors. Therefore, an individual stands on the weighing scale with minimal clothing to reduce the weight of heavy clothing. The clinical officer records the weight in kilograms because it is the standard unit of weight. A stadiometer is used in measuring the height by just standing straight with chin up. The highest point of the head is used in determining the height in meters. The weight is then divided by the square of height. Some machines have both weight and height scales hence the BMI is calculated automatically. Taking an example of a person with 50 kilograms and a height of 1.5 m, the BMI will be;

BMI = weight (Kgs) divide by Height (m2) therefore it will be 50/1.52 which is 22.2.

The results show the amount of fat in an individual’s body. The results are then categorized to determine whether a person is overweight, underweight, or obese. The ranges of adults older than 20 years are shown in the table below with the healthy range being 18.5 to 24.9.

### BMI

### Weight status

Less than 18.5

Underweight

18.5-24.9

Normal

25.0-29.9

Overweight

Above 30

Obesity

The above classification is used globally in the assessment of obesity regardless of ethnicity, gender, and race. Therefore, people with a BMI of 30 and above are considered to be obese. In the case study used above, the patient had a BMI of 22.2 which means they are within the normal range. However, this categorization is not used among the children population. Some of the factors that may affect the measurements include the time of the day, calibration of the assessment tools, food eaten by the patient, and age. For instance, older people lose lean mass as they age hence they may be misdiagnosed. Therefore, the reliability and validity of BMI play a significant role in the diagnosis of obesity.

### Reliability and Validity

Reliability is the ability of a test to produce consistent results over and over. Therefore various factors may affect the reliability of BMI like lack of experience for a clinician carrying out the test, food consumed and time of the day a test is carried out. According to Piqueras Fiszman et al. (2021) lack of reliability results in errors that translate to poor diagnosis or classification of body weight. Therefore, one of the ways to enhance reliability is to ensure that individuals have minimal clothing and also ensure that the tools are well-calibrated from time to time. Additionally, the type of food eaten also determines the weight of an individual at that particular time. This is one of the factors that is not considered yet it affects an individual’s weight. Some food may increase an individual’s weight while other foods do not affect body weight.

The time of the day also alters the height of subjects because of the height diurnal where individuals are taller when they wake up and the height reduces as the day progresses. Therefore, health experts should define the appropriate time to measure the BMI. Some researchers also use self-reported weight and height measurements. Individuals are likely to overestimate their height and underestimate their weight. Particularly, men would increase their weight than women while the latter is likely to reduce their weight during reporting (Ref-A1B2C3). Therefore, the results will lack reliability. Validity is the accuracy of the test which is compared to gold standard tests. Piqueras Fiszman et al. (2021) found out that BMI lacks validity because it had a sensitivity of only 50% and a specificity of 90%. Therefore, BMI results relate to gold-standard tests but there are no agreements of the results.

## Concerns of BMI assessment

BMI is a measure of excess body fat where excess body fat is linked with cardiovascular diseases and diabetes. However, one of the limitations of this assessment is that it does not separate fat mass from lean mass. Wong et al. (2021) found out that older adults have less lean mass with more distribution of fat around the abdominal area. Therefore, BMI would not be effective in older adults. Another concern of BMI is that it measures excess weight rather than excess fat hence people like bodybuilders may be classified as obese while athletes may be classified as underweight. The BMI assessment does not assess the distribution of fat which is very essential in determining metabolic obesity hence it may lead to misdiagnosis among people with metabolic obesity. The cut-off point for BMI also differs across ethnicity, race, and gender. Caribbean, Africans, and South Asians may have lower cut-points. One of the examples is differences in gender where men are more masculine and taller than women who have more fat deposits around the hips and arms hence generalizing the cut-off may not yield reliable results. Therefore, experts should research different ethnicities and races to determine specific cut-offs.

## Conclusion

BMI is commonly used because it is cheap and easy to measure. It has helped in determining health risks in a wide range of populations for the last few years hence helping in campaigning for healthier lifestyles. However, some limitations identified suggest that the assessment may be used for screening but not for diagnosing obesity. Some of the limitations are lack of gender, ethnicity, or race-specific cut-offs, failure of the test to measure the fat distribution and separate fat from lean mass. Healthcare providers can use family history, patient’s lifestyle, dietary habits, and physical activity or inactivity to determine the risk of obesity. Besides other anthropometric measurements like waist to hip ratio and waist circumference may be used. Direct measurements like bioelectric impendence have better results although they are costly and not readily available in a clinical setting.