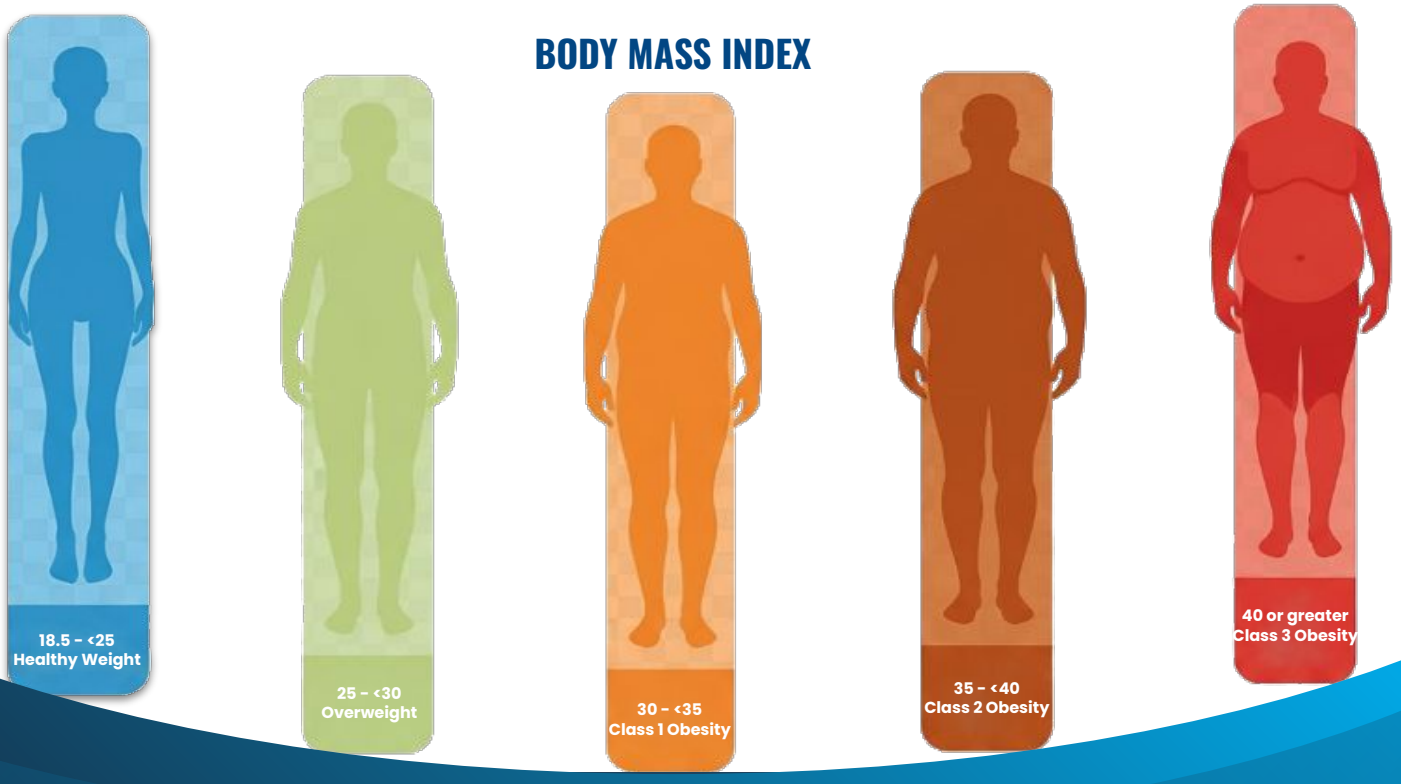
Obesity Treatment

Obesity is a chronic disease associated with a broad spectrum of metabolic, biomechanical and psychosocial complications that emerge across the lifespan. Excess adiposity contributes to the development of cardiometabolic conditions, including insulin resistance, dyslipidemia, hypertension and type 2 diabetes

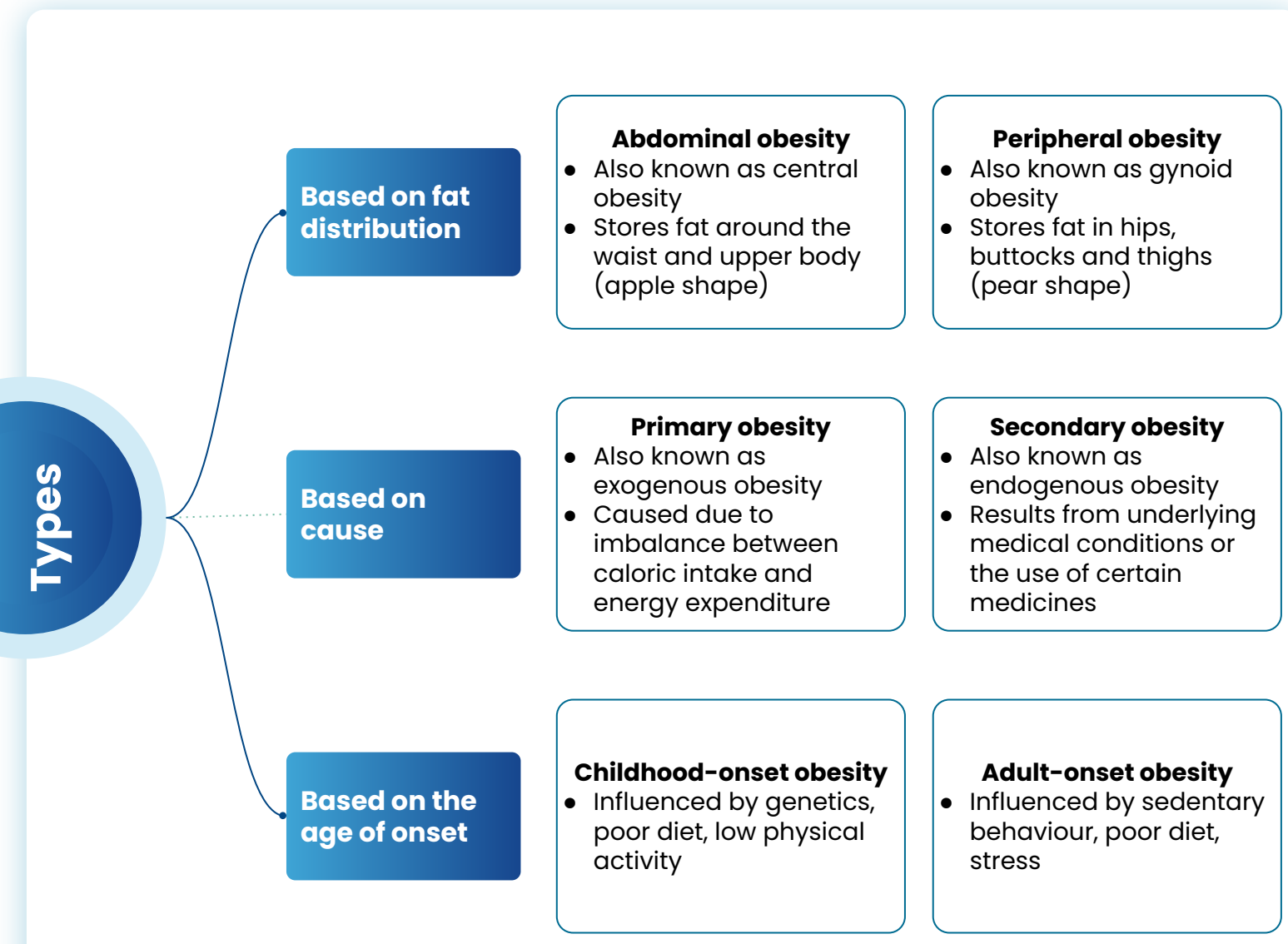


Introduction

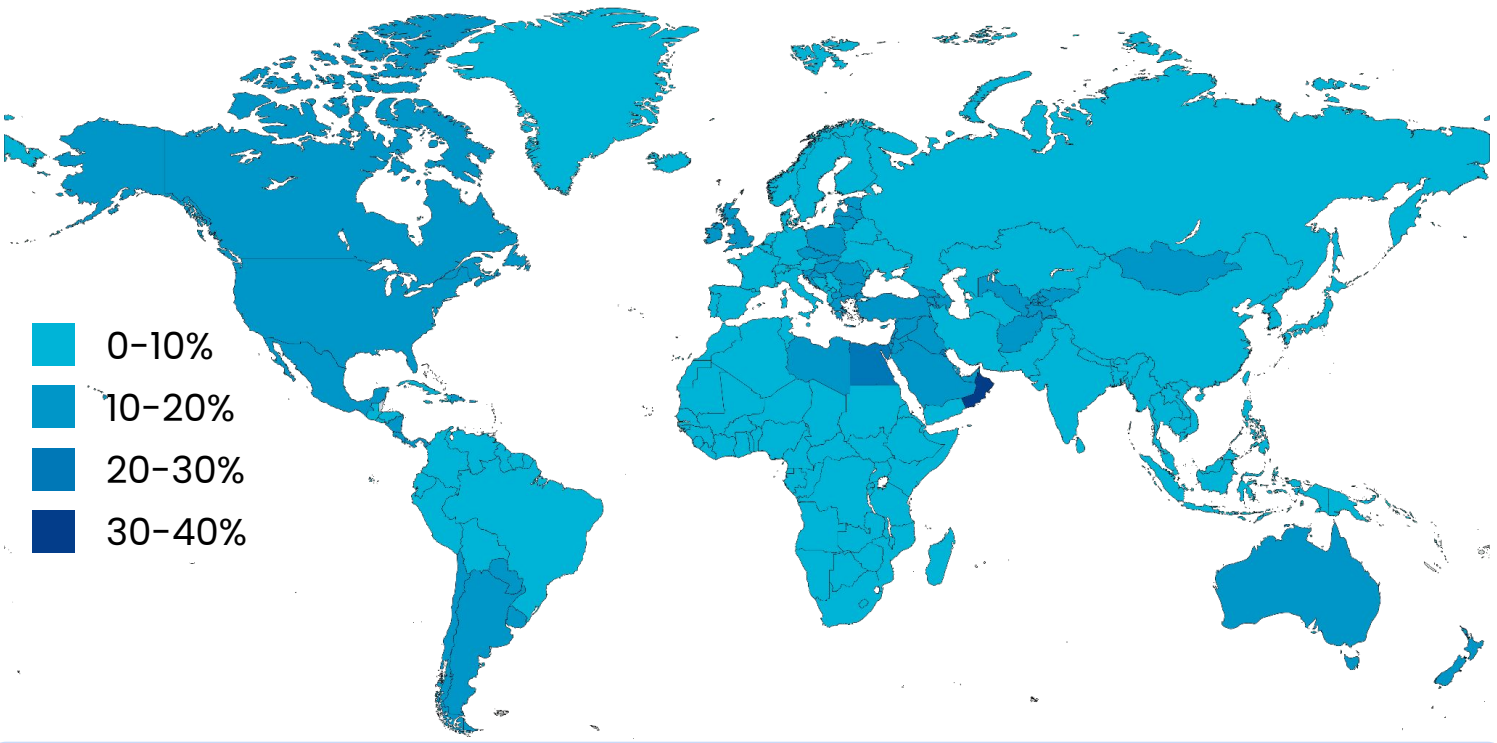
- Obesity is a chronic, relapsing disease arising from complex interactions between genetics, neurobiology, eating behaviors, access to healthy diet, market forces, and the broader environment
- Over the last few decades, obesity has expanded globally as countries have experienced greater food security, socio-economic development, shifts in diet and physical activity, and societal and individual behavior driven by globalization and industrialized food systems

Causes

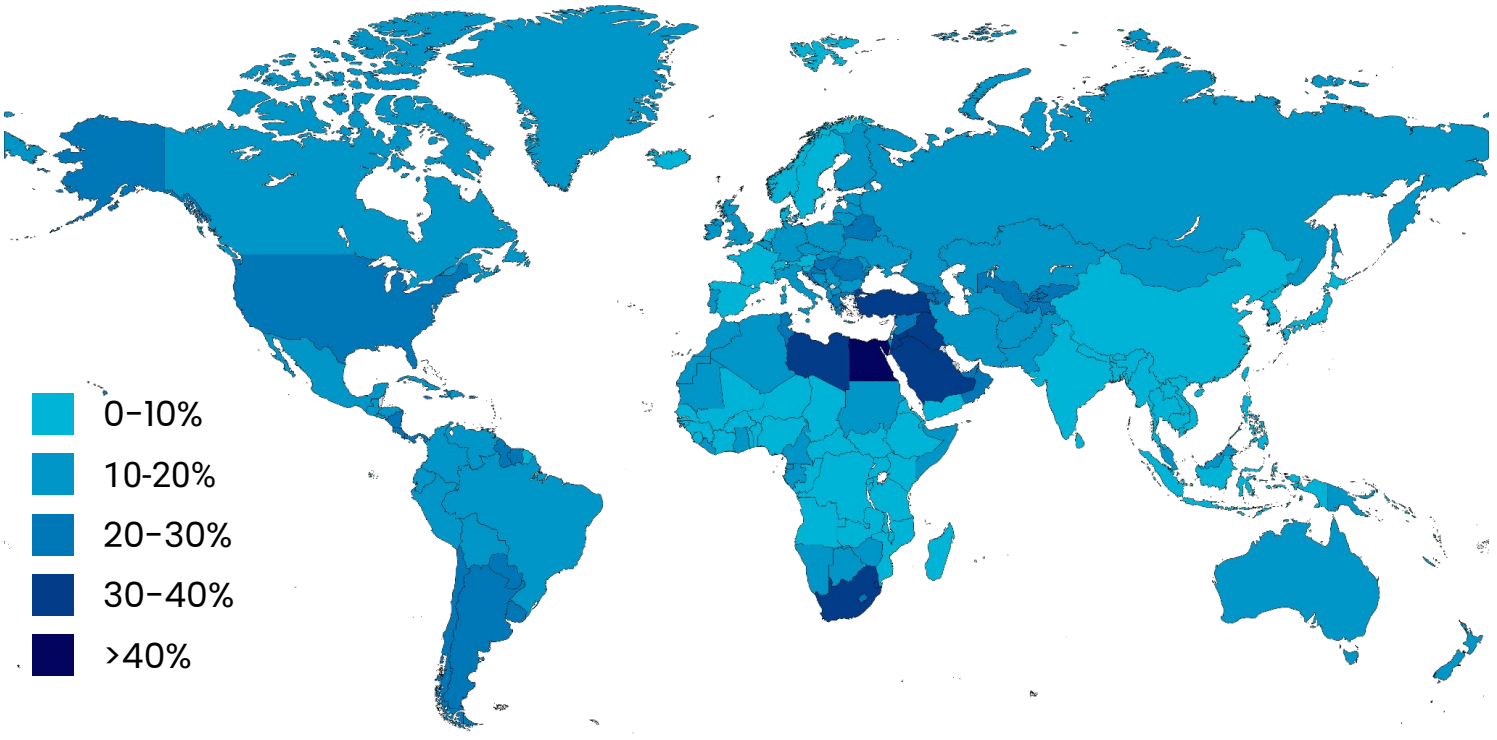
- Lack of physical activity
- Unhealthy eating behaviors (eating too much saturated fat, eating foods high in added sugar)
- Not getting enough sleep
- Stress
- Health conditions (metabolic syndrome, polycystic ovary syndrome)
- Genetics
- Environmental factors
- Medicines (antidepressants, antipsychotics, glucocorticoids)



Global Prevalence

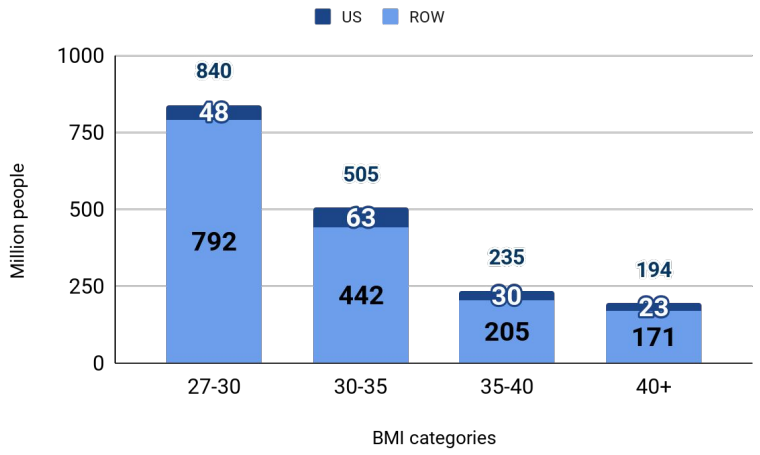


Prevalence percentage of BMI ≥35 kg/m^2 during adulthood for men



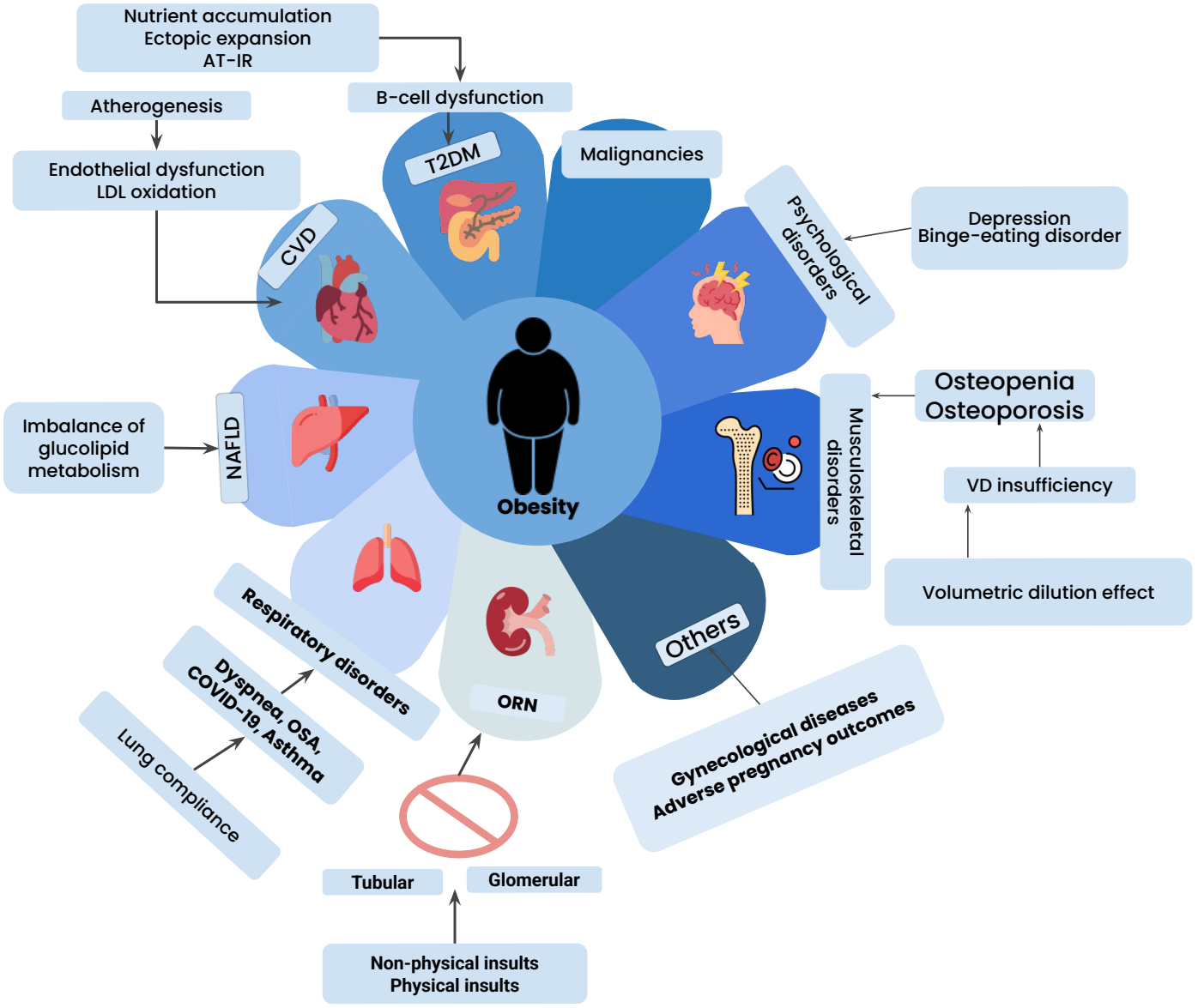
Prevalence percentage of BMI ≥35 kg/m^2 during adulthood for women

US *vs.* Rest of the World



- More than 1 billion people around the world are living with obesity
  - Adult population includes 880 million individuals
  - Children and adolescent population aged 5-19 years includes 159 million individuals

Complications



Anthropometric Measurements

Waist Circumference

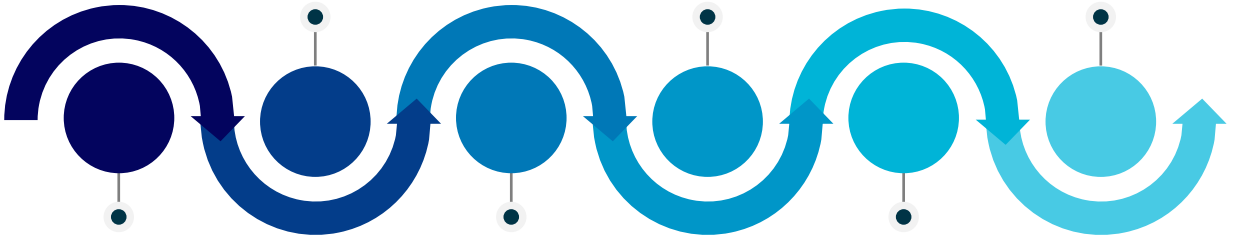
A measure that correlates strongly with abdominal fat content. Measured at midpoint between lowest rib and top of iliac crest

Conicity Index

A simple anthropometric measure of body fat distribution to assess central obesity with high accuracy

Waist-to-Height-Ratio

The ratio of waist circumference to body height, serving as a measure of fat distribution and abdominal obesity



Body Mass Index

A calculated measure of a person's body weight (in kilograms) divided by the square of their height (in meters)

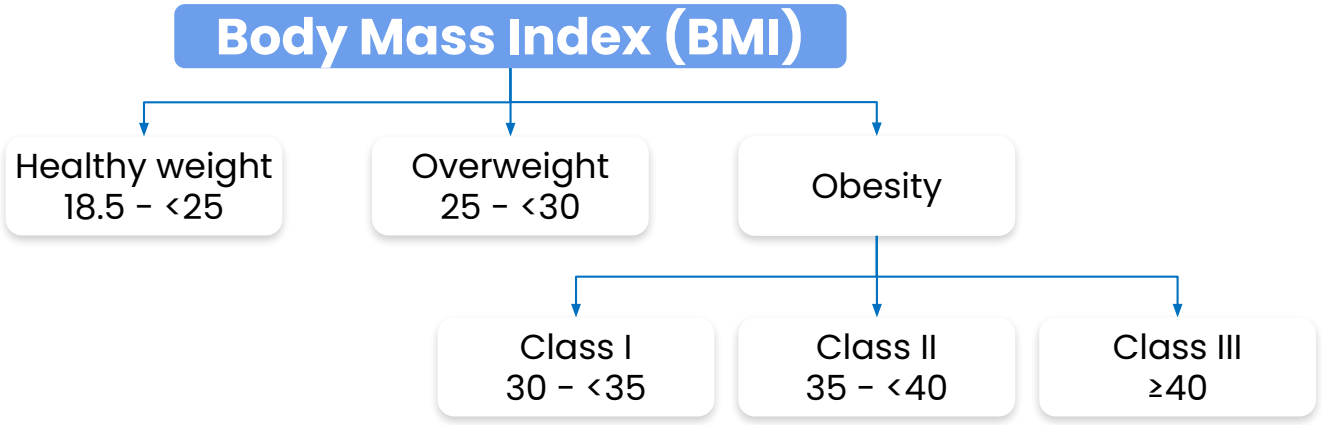
Waist-to-Hip Ratio

Measurement used to assess fat distribution in the body. Compares the size of waist to the size of hips

Body Fat Percentage

The proportion of total body fat to total body weight, measured using methods such as Dual-energy X-ray absorptiometry

Classification Based on BMI



Interventions

Lifestyle Modification

Environment, Sleep, Emotion, Exercise, Diet

Pharmacological Treatment

BMI ≥27 kg/m^2 with at least one obesity-related comorbidity, or BMI ≥30 kg/m^2

Bariatric Surgery

Not achieved desired results with pharmacotherapy and lifestyle interventions or severe obesity (BMI ≥37.5 kg/m^2)

Bariatric Surgery & Types

- Also called weight loss surgery or metabolic surgery
- These terms are used in order to reflect the impact of these operations on the patient's weight and metabolic health
- In addition to their ability to treat obesity, these operations are very effective in treating diabetes, high blood pressure, sleep apnea and high cholesterol

Surgeries		Procedures
Sleeve Gastrectomy		A procedure that involves removing approximately 80% of the stomach. The remaining stomach is the size and shape of a banana. By removing the portion of the stomach that produces most of the "hunger hormone," the surgery has an effect on the metabolism
Roux-en-Y Gastric Bypass (RYGB)		It is also called the "gastric bypass." This procedure involves creating a stomach pouch and rerouting the small intestine to this pouch, bypassing a significant portion of the stomach and duodenum
Adjustable Gastric Band (AGB)		A procedure that involves the laparoscopic placement of an adjustable silicone band around the stomach, which can be modified by altering the fluid in a connected reservoir, resulting in slower gastric pouch emptying
Biliopancreatic Diversion with Duodenal Switch (BPD/DS)		BPD/DS is a complex procedure that tackles weight loss in 3 different ways. First, a sleeve gastrectomy is performed. The second part of the procedure reroutes food away from the upper part of the small intestine, which is the natural path of digestion. The small intestine is divided and a connection is made near the end of the small intestine. The third part of the procedure changes the normal way that bile and digestive juices break down food. One end of the small intestine is connected to the duodenum, near the bottom of the stomach
Single Anastomosis Duodeno-Ileal Bypass with Sleeve Gastrectomy (SADI-S)		SADI-S combines two bariatric procedures – LSG and duodeno-ileal bypass. The procedure starts the same way as the sleeve gastrectomy, making a smaller tube-shaped stomach. The first part of the small intestine is divided just after the stomach. A loop of intestine is measured several feet from its end and is then connected to the stomach. This is the only intestinal connection performed in this procedure

Pharmacological Treatment

➔ Marketed GLP-1 Drugs

Molecule	Company	Phase	ROA	MOA
SAXENDA	novo nordisk	Marketed		GLP-1 Receptor Agonist (RA)
WEGOVY INJECTABLE	novo nordisk	Marketed		GLP-1 RA
ZEPBOUND	Lilly	Marketed		GLP-1, GIP RA
Wegovy HD	novo nordisk	Marketed		GLP-1 RA
FOUNDAYO	Lilly	Marketed		GLP-1 RA
WEGOVY PILL	novo nordisk	Marketed		GLP-1 RA

➔ Drugs in Phase 3 Development

Molecule	Company	Phase	ROA	MOA
CagriSema	novo nordisk	Phase 3		GLP-1 RA, Amylin Analog
Cagrilintide	novo nordisk	Phase 3		Amylin Analog
Retatrutide	Lilly	Phase 3		GCG, GIP, GLP-1 RA
MariTide	AMGEN	Phase 3		GLP-1, GIP RA
VK2735	VIKING THERAPEUTICS	Phase 3		GLP-1, GIP RA
Survodutide	Boehringer Ingelheim	Phase 3		GLP-1, GIP RA
Zenagamtide	novo nordisk	Phase 3		GLP-1 RA, Amylin Analog

Conclusion

01 Obesity requires long-term management

02 Treatment success is measured by sustained weight loss and improved comorbidities

03 Highly effective multi-receptor agonists are moving pharmacotherapy efficacy from 10% to >20-25% weight loss, narrowing the gap with bariatric surgery