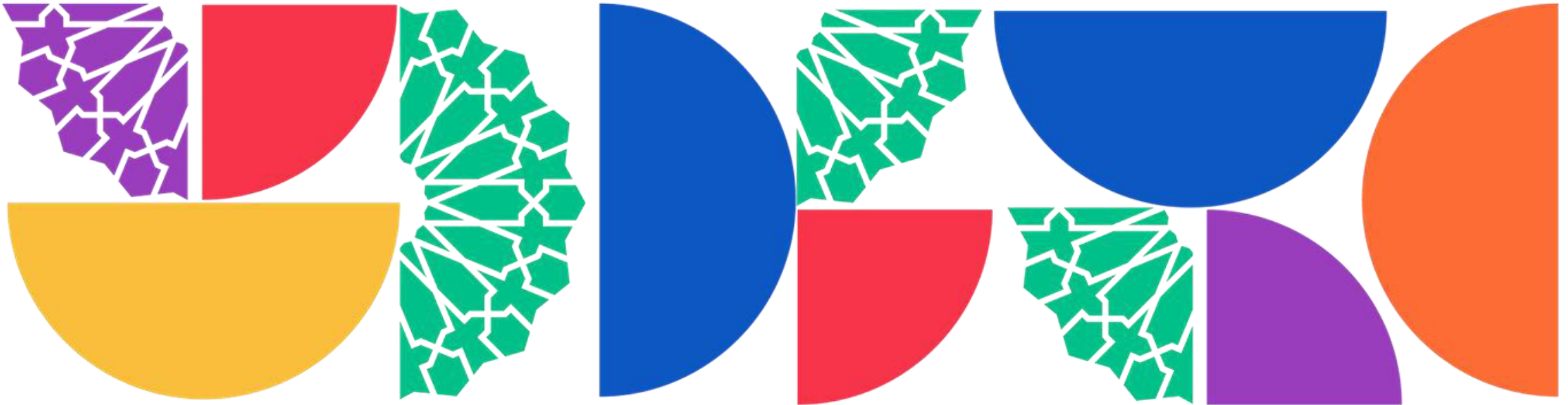


Health Awareness and Nutrition

Diabetes Mellitus

Department of Clinical Nutrition and Dietetics
College of Health Sciences

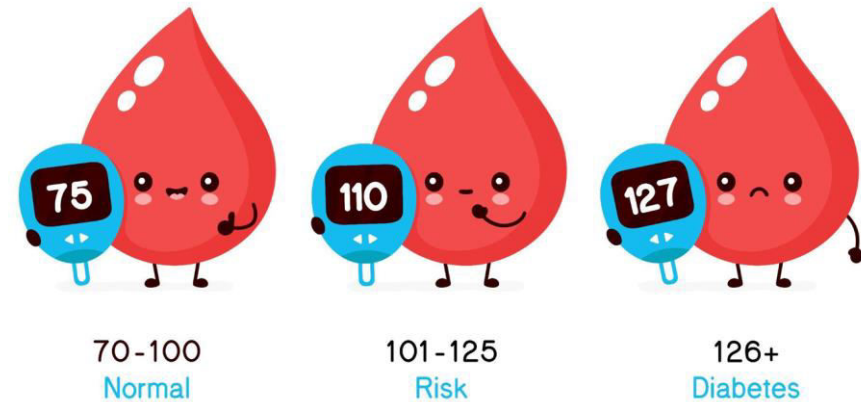


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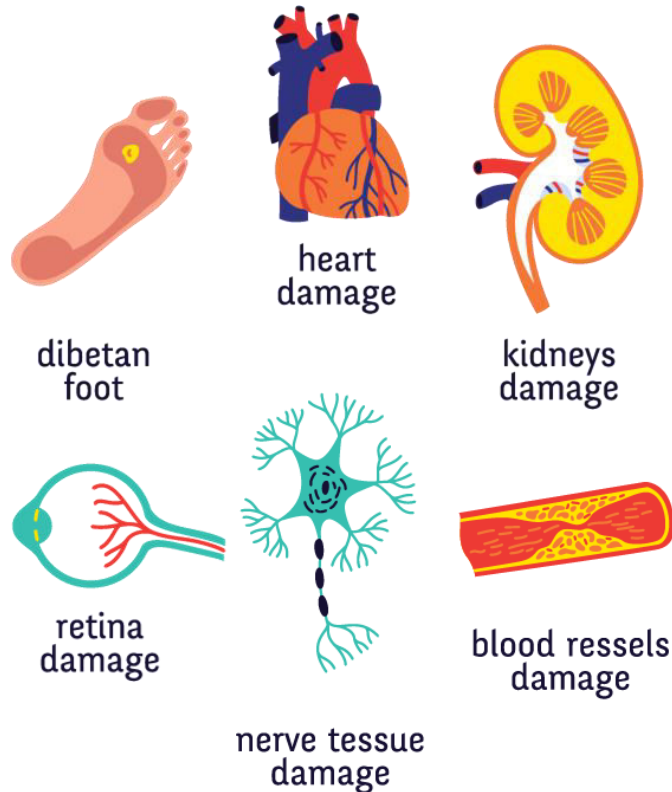


Diabetes Mellitus

- It is a group of metabolic diseases in which a person has high blood glucose
- It caused by the partial or complete failure of the pancreas to secrete insulin, which leads to an increase in the level of sugar in the body
- The body does not produce enough insulin
- Cells do not respond to the insulin that is produced
- Insulin is the principal hormone that regulates uptake (absorption) of glucose from the blood into most cells
- Deficiency of insulin plays a central role in all forms of diabetes mellitus



Health Complications



It is a chronic disease that causes health complications including:

- Kidney failure
- Heart disease
- Stroke
- Blindness

Symptoms of DM include: frequent urination, lethargy (laziness), excessive thirst, and hunger.

Management of DM includes: changes in diet, oral medications, and insulin injections.

Classification of Diabetes

Clinical Types:

- **Type 1: IDDM** (Insulin Dependent Diabetes Mellitus)
- **Type 2: NIDDM** (Non-Insulin Dependent Diabetes Mellitus)
- **IGT:** (Impaired Glucose Tolerance)
Also known as Prediabetes
- **Gestational Diabetes Mellitus:**
Pregnancy induced diabetes



TYPE 1 DIABETES

Body does not produce enough insulin



TYPE 2 DIABETES

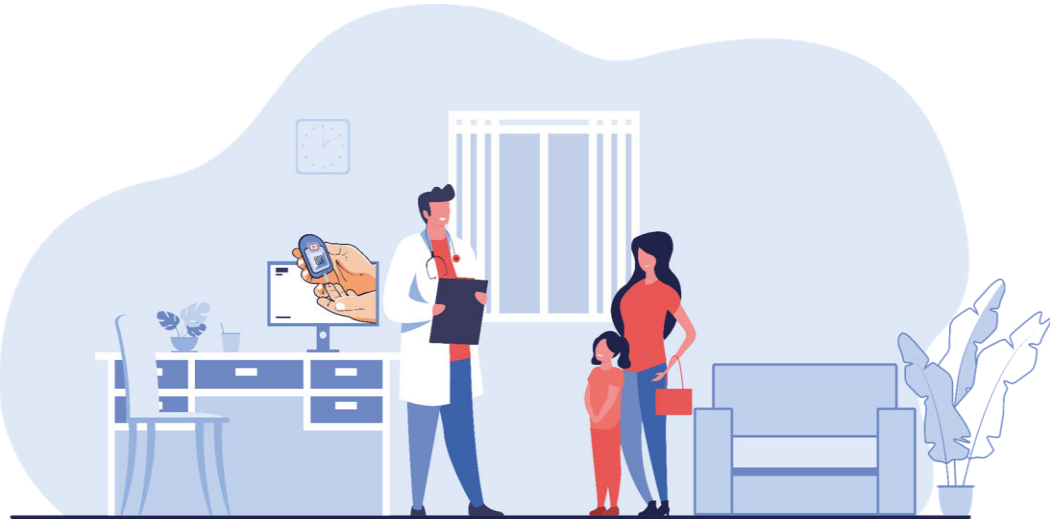
Body produces insulin but can't use it well



GESTATIONAL DIABETES

A temporary condition in pregnancy

Classification of Diabetes



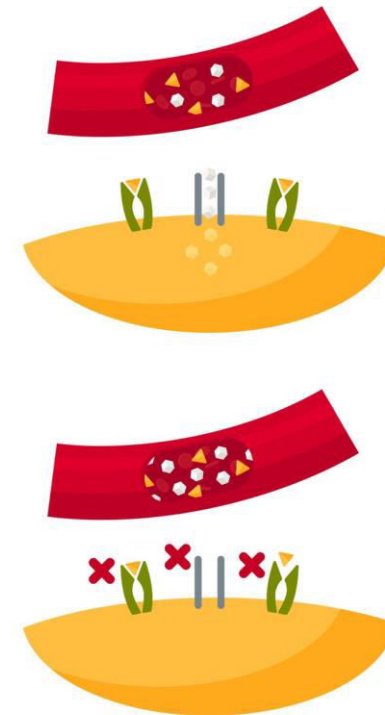
Type 1 Diabetes Mellitus:

- It is characterized by **loss of the insulin-producing cells in the pancreas**, leading to insulin deficiency.
- There is no known **preventive measure** against type 1 diabetes.
- Most affected people are **healthy**.
- Type 1 diabetes affects **mainly children**.
- **At Risk Groups:** not definite but could be children of parents with Diabetes

Classification of Diabetes

Type 2 Diabetes Mellitus:

- It is characterized by **insulin resistance**, which may be combined with relatively reduced insulin secretion.
- In the early stage of type 2, hyperglycemia **can be reversed** by a variety of measures and medications.
- Type 2 diabetes is **the most common type**, and mainly among adults.
- **At Risk Groups:** overweight, obese with family history.



HEALTHY BODY

Thanks to insulin, receptors absorb glucose and convert it into energy.

DIABETES TYPE 2

There's insulin in the blood, but cells do not respond on it and can't take glucose.

Classification of Diabetes



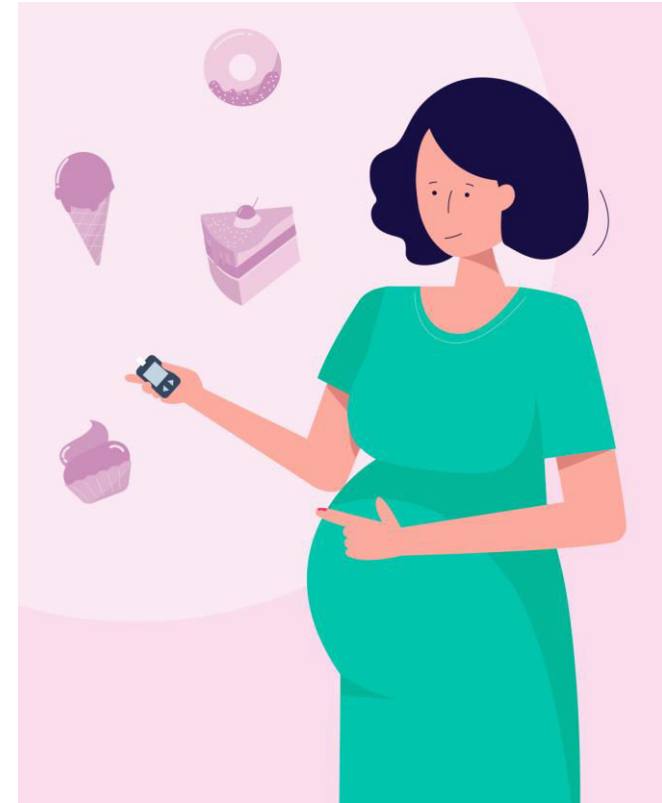
IGT (Impaired Glucose Tolerance):

- Abnormal blood glucose levels from **any cause** which results in disease.
- A condition resulting from a disorder of **blood sugar metabolism**.
- IGT may **precede** type 2 diabetes mellitus by many years.

Classification of Diabetes

Gestational Diabetes Mellitus (GDM):

- GDM resembles type 2 diabetes.
- It occurs in about **2–5%** of all pregnancies and may improve or disappear after delivery.
- About **20–50%** of affected women develop type 2 diabetes later in life.
- If it is untreated during pregnancy, can **damage the health of the fetus or mother.**
- **At Risk Groups:** females whose mothers had GDM while pregnant.



Diagnosis of Diabetes Mellitus

OGTT Criteria (Oral Glucose Tolerance Test)

Time	(mg/100 ml of blood)		
	Normal	IGT	DM
Fasting	<100	>100 <120	>120
2 hours	<120	120-180	>180

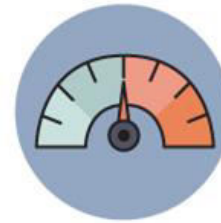
Risk Factors

Common Risk Factors:

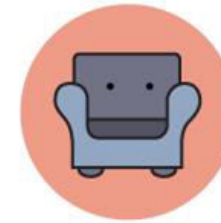
- Heredity
- Age
- Gender
- Obesity
- Faulty dietary habits
- Infections
- Stress
- Other hormonal diseases



Have a family history of diabetes



Have a BMI $\geq 23.0 \text{ kg/m}^2$



Lead an inactive lifestyle



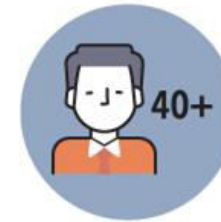
Have high blood pressure



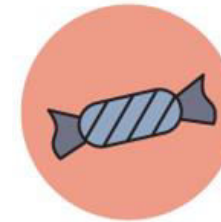
Have abnormal blood cholesterol/lipid levels



Have a history of gestational diabetes

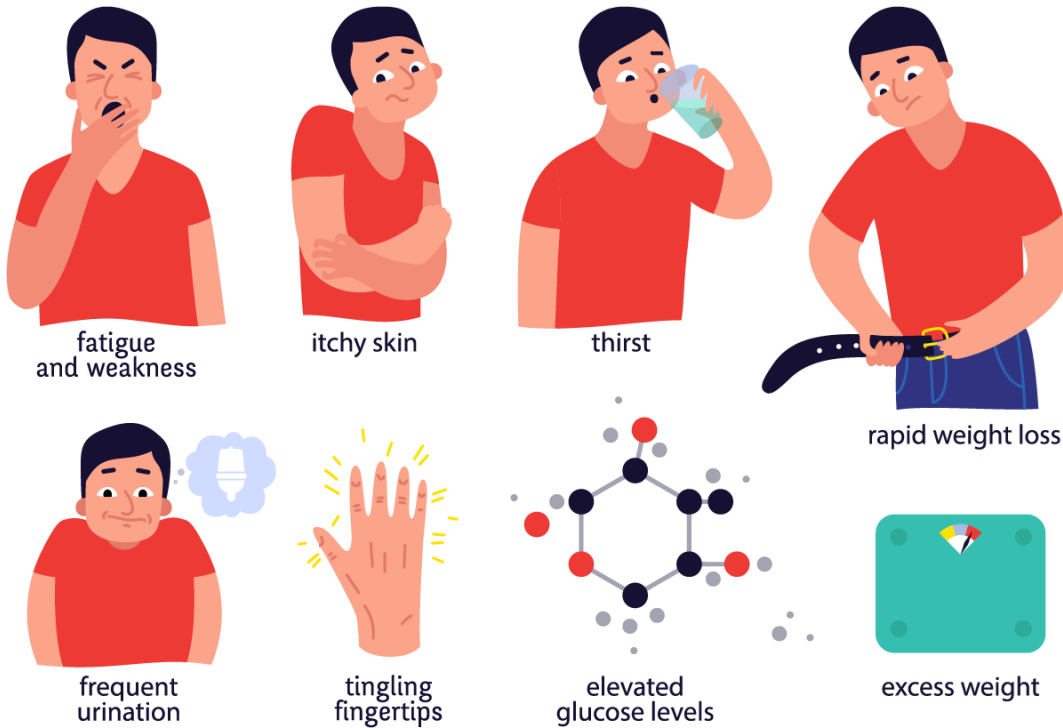


Are ≥ 40 years old



Have impaired glucose tolerance or impaired fasting glucose

Clinical Manifestations



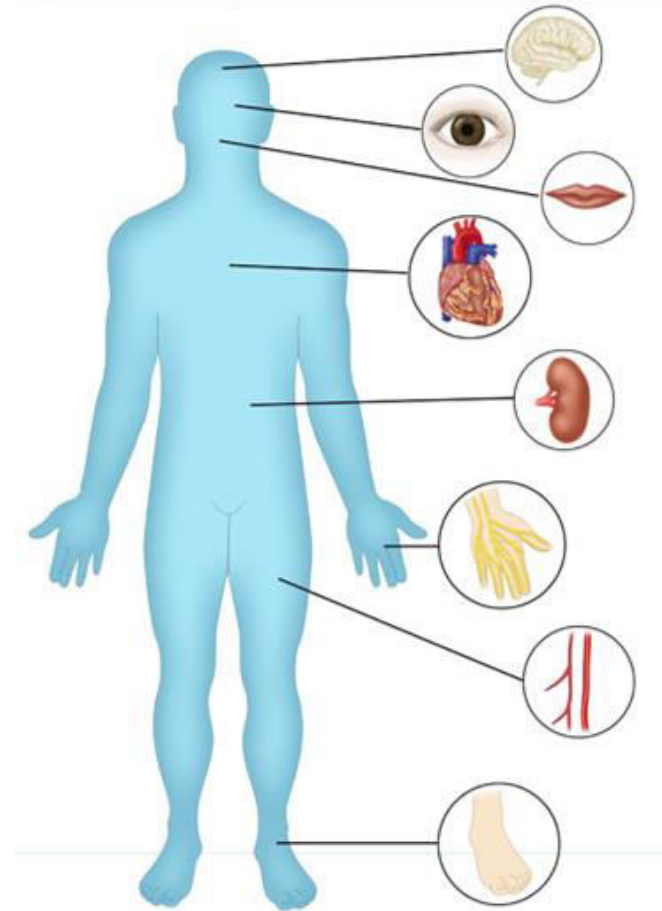
Signs and Symptoms:

- Polyphagia (hunger)
- Polyuria and nocturia (urination, particularly at night)
- Polydipsia (thirst)
- Dehydration causing water & electrolyte imbalance
- General weakness
- Decreased resistance to infection
- Fungal infections
- Breathing deep and rapid, with acetone smell
- Weight loss

Clinical Manifestations

Advanced Stages:

- Blurred vision/failure
- Pain
- Numbness of limbs
- Proteinuria (presence of protein in urine)



Diet and Diabetes



glucose control



healthy eating



exercise



no smoking

Diet plays the most crucial role in the management of DM.

Rationale for Dietary Management:

- Maintain blood glucose level to normal.
- Improve health by attaining & maintaining optimum nutrition.
- Attain and maintain desirable body weight.
- Prevent/delay the onset of chronic complications and modify diet, if required.
- Diet should be as attractive and realistic as possible.

Dietary Advice

- **Include a lot of fiber** in the diet through whole cereals and pulses, other vegetables and fruits with skin & seeds.
- **Avoid refined cereals**, washed pulses, legumes and simple sugar.
- **Avoid fried & fatty foods** eg. egg yolk, organ meats etc
- **Space carbohydrates** in meals according to treatment advised.
- **Avoid “feasting” and “fasting.”**
- **Remove table sugar** from your diet. If required, sweeteners (natural eg. Stevia) can be used moderately.
- **Avoid alcohol.**
- In case of complications and associated diseases, the diet may be modified accordingly.

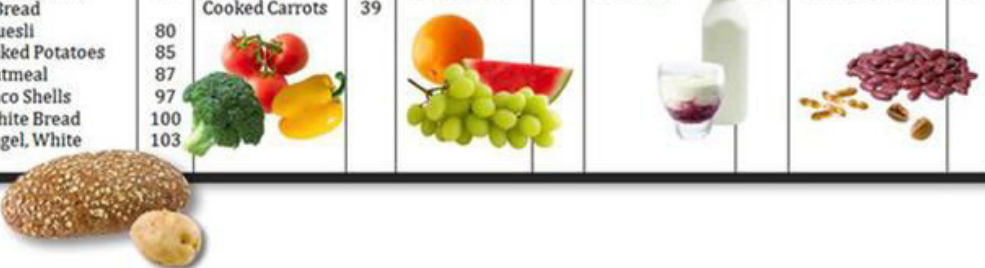


Glycemic Index

Glycemic Index

Low GI (<55), Medium GI (56-69) and High GI (70>)

Grains / Starches		Vegetables		Fruits		Dairy		Proteins	
Rice Bran	27	Asparagus	15	Grapefruit	25	Low-Fat Yogurt	14	Peanuts	21
Bran Cereal	42	Broccoli	15	Apple	38	Plain Yogurt	14	Beans, Dried	40
Spaghetti	42	Celery	15	Peach	42	Whole Milk	27	Lentils	41
Corn, sweet	54	Cucumber	15	Orange	44	Soy Milk	30	Kidney Beans	41
Wild Rice	57	Lettuce	15	Grape	46	Fat-Free Milk	32	Split Peas	45
Sweet Potatoes	61	Peppers	15	Banana	54	Skim Milk	32	Lima Beans	46
White Rice	64	Spinach	15	Mango	56	Chocolate Milk	35	Chickpeas	47
Cous Cous	65	Tomatoes	15	Pineapple	66	Fruit Yogurt	36	Pinto Beans	55
Whole Wheat Bread	71	Chickpeas	33	Watermelon	72	Ice Cream	61	Black-Eyed Beans	59
Muesli	80	Cooked Carrots	39						
Baked Potatoes	85								
Oatmeal	87								
Taco Shells	97								
White Bread	100								
Bagel, White	103								



Glycemic index (GI) is a value used to measure how much specific foods increase blood sugar levels.

The glycemic index is a tool that is often used to promote better **blood sugar management**.

Foods are classified as low, medium, or high glycemic foods and **ranked on a scale of 0–100**.

The **lower the GI** of a specific food, **the less it may affect your blood sugar levels**.

Glycemic Index

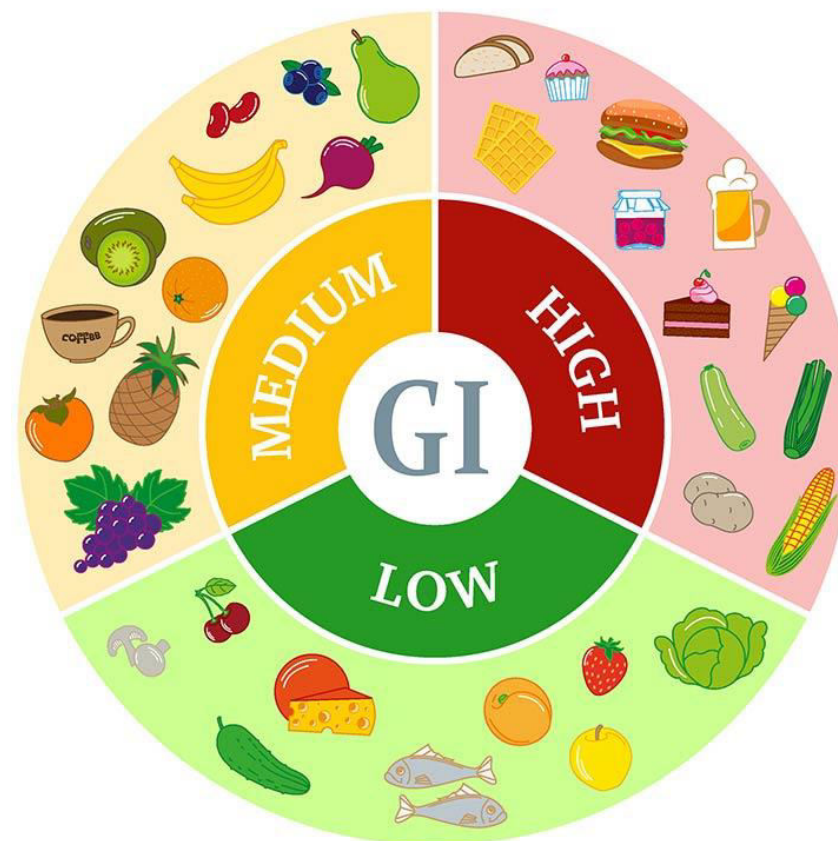
The three GI ratings:

Low: 55 or less

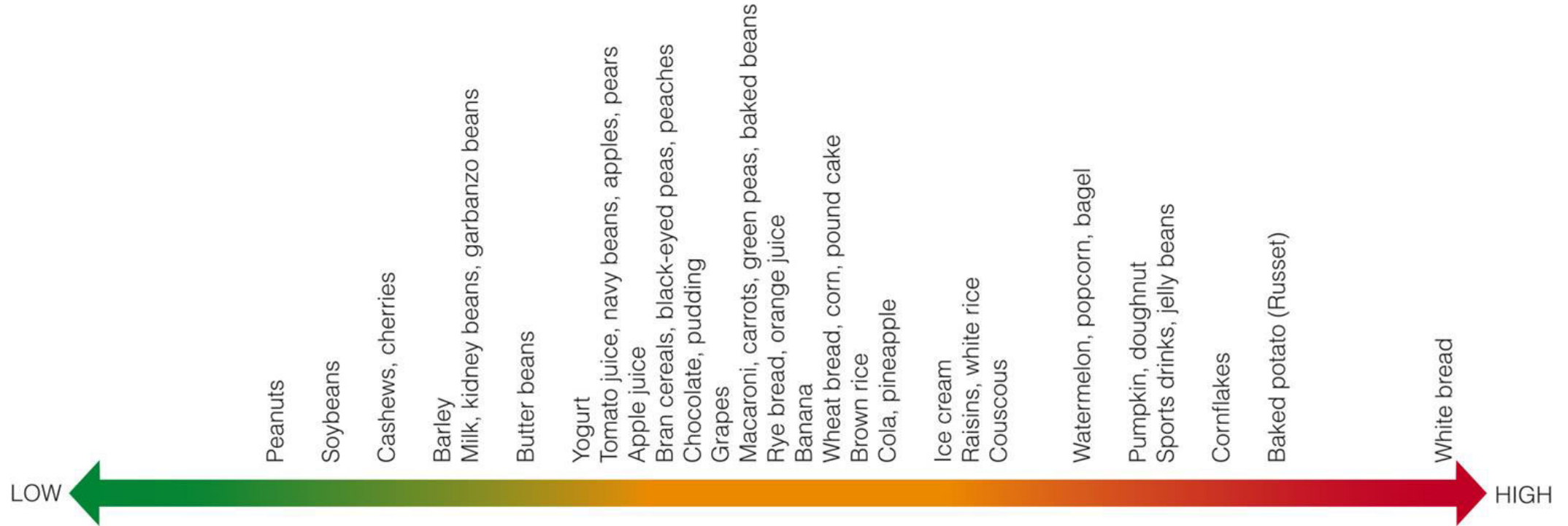
Medium: 56–69

High: 70 or above

- Foods high in **refined carbs and sugar** are digested more quickly and often have a **high GI**.
- Foods **high in protein, fat, or fiber** typically have a **low GI**.
- Foods that contain **no carbs are not assigned a GI** and include meat, fish, poultry, nuts, seeds, herbs, spices, and oils.



Glycemic Index of Selected Foods



Lifestyle Advice



Regular physical activity is important.

Take care of foot hygiene.

Always carry an ID card indicating name, age, address, contact number, nature of the problem, and type of problem (hyper or hypoglycemia).