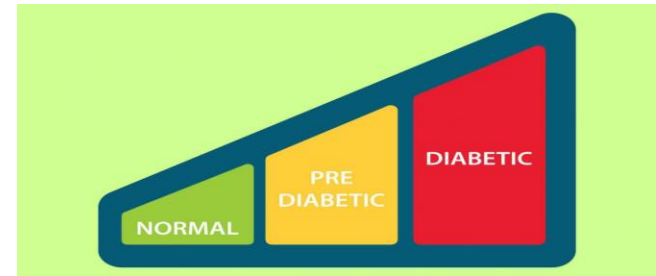




# Dietary Interventional in Pre-diabetes of Young Adults

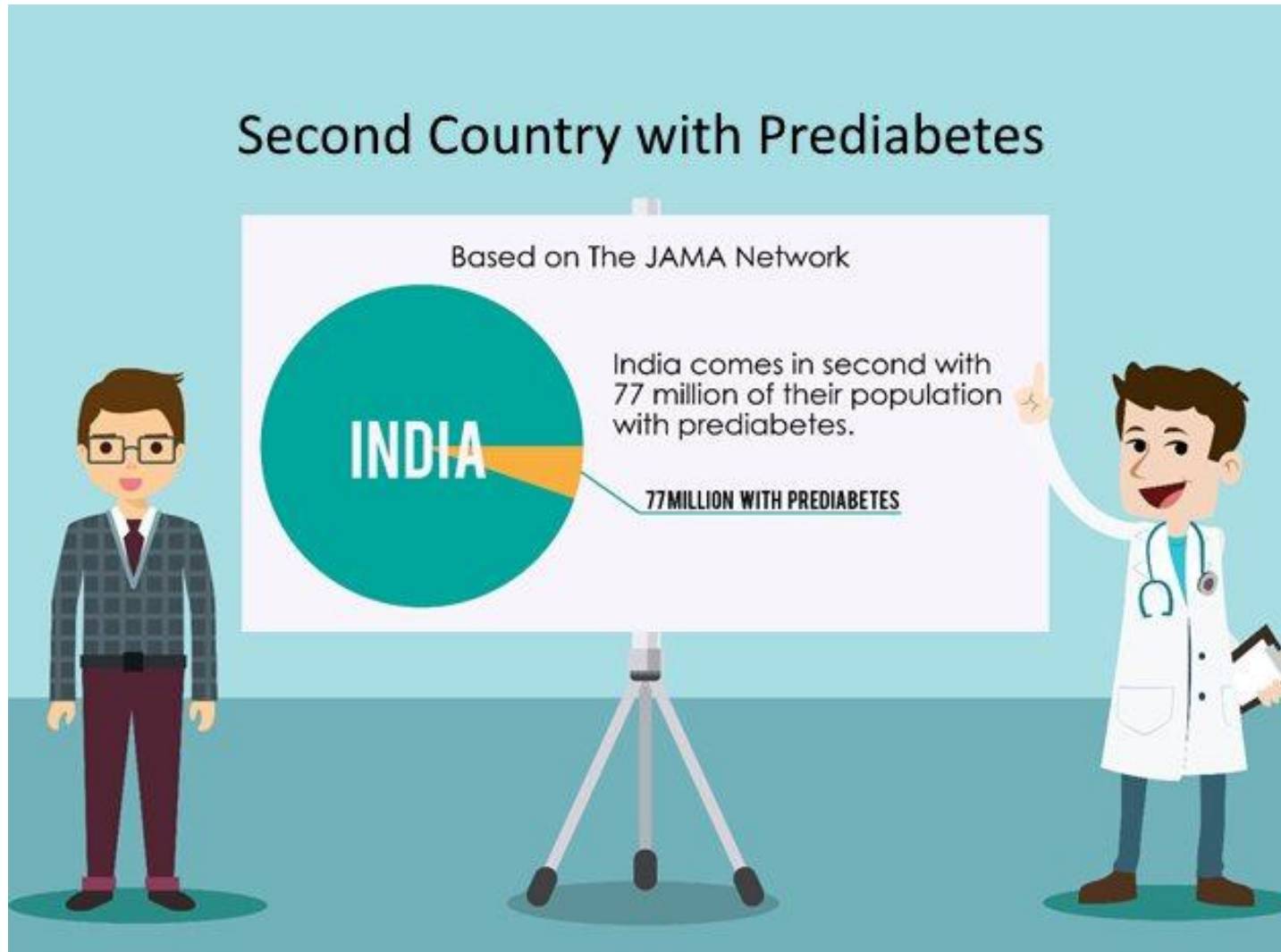
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# Pre-diabetes



- Prediabetes is having higher than normal blood sugar level but It's not high enough to be considered type 2 diabetes
- Prediabetes is an asymptomatic disease, so person might not even realise that they have it.
- Prediabetes has been linked with unrecognized (silent) heart attacks and can damage kidneys, even if body haven't progressed to type 2 diabetes.
- Progression from prediabetes to type 2 diabetes isn't inevitable.
- Taking preventive action, such as making dietary changes, can reduce this risk by 40–75%.

# Pre-diabetes in Indian Adults

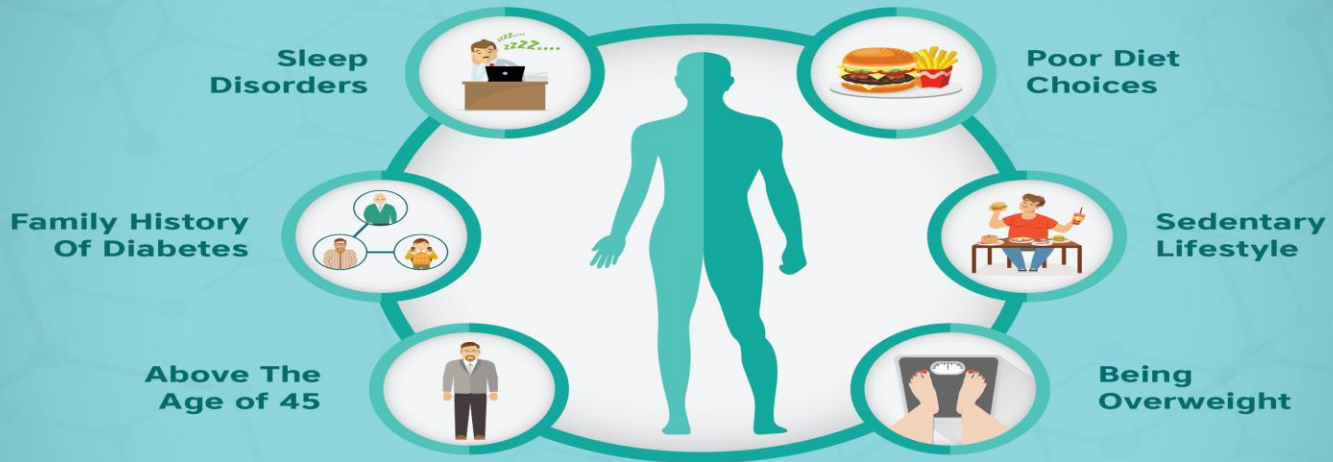


# PREDIABETES

## RISK FACTORS AND SYMPTOMS

### TO LOOK OUT FOR

#### RISK FACTORS



#### SYMPTOMS



Increased Thirst



Unexplained Fatigue



Frequent Urination



Blurred Vision

# Promising Avenue

- People with prediabetes don't process sugar (glucose) properly anymore.
- As a result, sugar builds up in the blood instead of doing its normal job of giving energy to the cells that make up muscles and other tissues.
- Eating healthy foods, making physical activity part of your daily routine and staying at a healthy weight can help bring blood sugar level back to normal.
- Healthy lifestyle changes that can help prevent prediabetes back to normal.

# Early Intervention



# Preventive Aspects



Healthy lifestyle choices can help you prevent prediabetes and its progression to type 2 diabetes ,Try to:

- Eat healthy foods
- Get at least 150 minutes of moderate aerobic physical activity a week, or about 30 minutes on most days of the week
- Lose excess weight
- Control your blood pressure and cholesterol
- Don't smoke

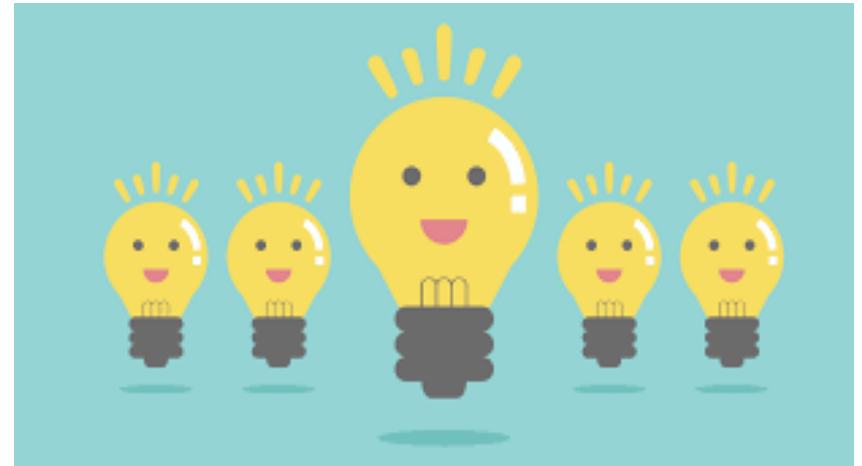


# Healthy Eating



# Dietary Intervention

- *Do not skip meals*
- *Consume lower glycaemic index foods*
- *Control portion sizes*
- *Reduce your weight*
- *Select fiber-rich foods*
- *Keep the protein intake high*
- *Include nuts in the diet*
- *Consume more healthy fats*
- *Avoid junk and soft drinks*
- *Add functional/ Nutraceutical foods in the diet*



# 1. Don't skip Meal

## A strict meal schedule-

- ❑ People with prediabetes should eat smaller meals, regularly, throughout the day to ensure that blood sugar levels don't spike too high or dip too low.
- ❑ This is very important to maintain, along with fixing the times of these meals.
- ❑ Having a strict meal schedule can help manage your blood sugar levels better.



## 2. Watch Carbs with Glycemic Index(GI)

- ❖ To get your blood sugar out of the pre-diabetes range, diet is important, and you need to know the right kind of foods to eat.
- ❖ The GI is an index of foods according to the rate at which they affect blood sugar levels. The highest score is 100, and the lowest is 0.
- ❖ Foods that are low on the GI are best for your blood sugar:-
  - steel-cut Oats (not instant oatmeal)
  - Multi-grain flour with bran
  - Non-starchy vegetables (carrots and field greens, beans, sweet potatoes)

# Low GI foods-0 to 55

Cereal/ Millets	Pulses/vegetables	Milk and Fruits
Barley-25	Cheackpea-33	Mushroom-10
Broken wheat-41	Boiled soybean-16	Yogurt- 14
Whole wheat bread-51	Green peas- 19	Soy milk-30
Bajra-54	Kidney beans-29	Skimmed milk-32
Oats-55	Lentils-29	Orange-43
Buck wheat- 55	Baked beans-40	Apple-38
Brown rice-55	Onion-10	Plums- 39

### 3. Portion control

- Apart from meal timings, the portion of said meals is equally important
- Limit the amount of food you eat.
- One of the best methods to manage portions is to practice mindful eating.
- Eat when you're hungry. Stop when you're full. Sit, and eat slowly. Focus on the food and flavors.
- While eliminating carbohydrates high on the glycaemic index (GI) is needed, you should ensure that all your meals, when combined, don't turn out to be high in GI. Portion control is the best way to make sure this does not happen.

### 4. Eating more fiber-rich foods

- Fiber offers several benefits. It helps you feel fuller for longer time adds bulk to your diet, making bowel movements easier to pass.
- Eating fiber-rich foods can make you less likely to overeat.
- They also help you avoid the “crash” that can come from eating a high sugar food.

# High-Fibre Foods

Examples of high-fiber foods include:

- beans and legumes
- fruits and vegetables that have an edible skin
- whole grain breads,
- whole grains, such as [quinoa](#) or barley
- whole grain [cereals](#)
- Salad, Vegetables,

# HIGH FIBRE FOODS



Oats  
½ cup = 5g fibre



Spinach  
½ cup = 4.5g



Potatoes  
1 medium = 3g



Strawberries  
1 cup = 4g



Weet-Bix  
2 biscuits = 3.5g fibre



Lentils  
½ cup = 4g



Almonds  
½ cup = 6.5g



Banana  
1 medium = 3g



Orange  
1 medium = 4g fibre



Corn  
½ cup = 2.5g



Wholemeal bread  
2 slices = 4g



Chickpeas  
½ cup = 4.5g



Peas  
½ cup = 4.5g fibre



Quinoa  
½ cup cooked = 3g



Broccoli  
½ cup = 3g



Apple  
1 medium = 3.5g

# High Fibre Foods

Food	Serving	Carbs (grams)	Fiber (grams)
1. Avocado (raw)	1 medium	17.1	11
2. Artichoke	1 medium	14.3	10.3
3. Raspberries (raw)	1 cup	15	8
4. Blackberries (raw)	1 cup	15	8
5. Lentils	1/2 cup	9.9	7.9
6. Black Beans	1/2 cup	22	7.3
7. Broccoli	1 cup	9	6
8 Soup, Vegetable Beef*	1 cup	22	5
9. Pear (raw)	1 medium	20	4.5
10. Apple (raw)	1 medium	23	4
11. Oatmeal	1 cup	27	4
12. Barley	1/2 cup	22	3
13. Pumpkin	1 cup, mashed	12	2.9
14. Spinach	1 cup	3.5	2.5
15. Eggplant	1/2 slice	8	2.3
16. Summer Squash	1/2 cup	4	1.9
17. Peach (raw)	1 medium	12	1.8
18. Grapefruit (raw)	1/2 cup sections	10	1.5
19. Tofu, Firm	1/5 pkg.	3	1.5
20. Cauliflower	1/2 cup	2.7	1.3
21. Asparagus	4 spears	2.5	1.2
22. Cabbage	1/2 cup, shredded	3.9	1.2
23. Popcorn	1 cup	6.1	1.2
24. Arugula (raw)	1 cup	2.9	1
25. Olives*	10 olives	1	1





# The prediabetes DIET EVERYONE NEEDS



# 5. Low Fat , High BV Protein

- ❖ In pre-diabetes, a diet low in saturated fat and trans fat can help reduce your risk of heart disease. Avoid cuts of meat with visible fat
- ❖ Choose protein sources such as the following:
  - Lean chicken
  - egg white
  - Fish- such as cod, flounder, haddock, halibut, tuna, or trout
  - shellfish, such as crab, lobster, shrimp, or scallops
  - low fat Greek yogurt
  - beans and legumes
  - soybean products, such as tofu and tempeh, soy milk

# Go Lean



- Apart from losing weight and going lean physically, you also need to consume lean proteins (like chicken and fish) and avoid fatty, fried foods.
- If you consume too much fat, your body will find it impossible to lower your blood sugar levels after the meal is done with - that's not something you want if you're prediabetic.
- Your body will also store the fat and lead to weight gain.

## **6. Cut out sugary drinks**

- Cut out the sugar- it spike the blood sugar level
- Sugar has a tendency of sneaking into your diet without you realising it, and you need to be more aware of this
- Sugary sodas only offer empty calories that translate to quick-digesting carbohydrates.
- stop indulging in sugary drinks, fruit juices (which have concentrated sugars) and processed foods (which have added sugars).

## **7. Drinking plenty of water**

- Water is a better choice to quench your thirst.
- Water is an important part of any healthy diet.
- For pre-diabetes, water is a healthier alternative than sugary sodas, juices, and energy drinks.
- Drink enough water each day to keep you from becoming dehydrated

# 8. Eat Right in Pre-diabetes

- ❖ Improving your diet and increasing certain nutrient-rich foods can all lower diabetes risk
- ❖ **Increasing consumption of:**
  - Vegetables such as chard, kale, broccoli, and Brussel sprouts
  - Fruits, such as low glycemic foods like apples, cherries, or blueberries
  - Beans
  - Eating more whole grains instead of refined grains
  - Choosing olive oil instead of other oils such as vegetable oil



# 9. Maintain Ideal Body Weight

- A diet that can help a person lose weight and manage prediabetes will normally include foods that are: low in fat, low in calories, high in fiber.
- People should eat plenty of:-vegetables, whole grains, protein-packed legumes
- Be careful to avoid added sugars. Fruits contain sugar, but they also provide fiber and other nutrients.
- For this reason, a person can include a limited amount of fruit in their diet.

# Foods to Choose

Non-Starchy Vegetables: fiber, potassium, low-calorie	Fresh lettuce and salad greens; tomatoes; celery; cucumbers; onions; snow peas; mushrooms; broccoli; spinach; brussels sprout; eggplant; bell peppers...
Legumes: * fiber, protein, potassium	Split and black-eyed peas; lentils; beans such as kidney, black, garbanzo, and pinto beans; soybeans and soy products, such as tofu, edamame, and soy milk; meat substitutes
Whole Grains:* fiber	Whole-grain bread, cereal, and pasta; oatmeal; brown rice; whole-grain barley, farro, and quinoa; air-popped popcorn
Starchy Vegetables: * fiber, potassium	Sweet potatoes; potatoes; winter squash; green peas; corn; pumpkin
Reduced-fat dairy: protein, calcium, potassium, vitamin D	Plain yogurt; skim milk; fat-free cottage cheese; low-fat cheese
Plant-based fats/oils: healthy fats, fiber , protein (in peanuts, nuts, and seeds)	Olive oil; avocado; natural peanut and nut butters; peanuts; nuts; seeds; flaxseed; vegetable oils

“

## 10. Neutraceutical Approach



# Try Nutraceuticals

Several nutraceuticals used in clinical practice have been shown to target the pathogenesis of diabetes mellitus, metabolic syndrome and their complications and to favourably modulate a number of biochemical and clinical endpoints. Some of them are;-

- **Babul**-Acts through release of insulin from pancreatic beta cells, which accounts for the hypoglycaemic activity (Singh,2015; Wadood, 2019)
- **Wood apple** - Increases utilization of glucose; either by direct stimulation of glucose uptake or via the mediation of enhanced insulin secretion and also decreases the elevated glucose and glycosylated haemoglobin levels (Kamalakkanan, 2013) .
- **Bitter gourd**- Prevents glucose absorption from gut. Has hypotriglyceridemic effect and antioxidant activity which may be responsible for beneficial effect in the diabetic state (Zhang, 2000 a,b)
-

# Try Nutraceuticals



- **Onion** -Lowers blood glucose level and has potent antioxidant activity, which may account for the hypoglycaemic potential (Augusti, 2013)
- **Garlic**-Has strong antioxidant activity and rapid reactivity with thiol containing proteins responsible for the hypoglycaemic property (Rabinkov, 2018)
- **Aloe**-Maintains glucose homeostasis by controlling the carbohydrate metabolizing enzymes and stimulates insulin release from pancreatic beta cells (Ajabnoor, 2019)
- **Neem** -Inhibits action of epinephrine on glucose metabolism, resulting in increased utilization of peripheral glucose and exhibits hypoglycaemic activity without altering the serum cortisol concentration (Chattopadhyay, 1999; Gholap and Kar, 2004)

# Try Nutraceutical



- **Mustard**-Increases the concentration of hepatic glycogen and glycogenesis and suppressed the activity of glycogen phosphorylase and gluconeogenic enzymes, lead to reduction in glycogenolysis and gluconeogenesis (Khan, 2015).
- **Green Tea**- Epigallocatechin gallate, present in tea increases insulin activity and prevents oxidative damages, responsible for the hypoglycaemic activity (Anderson, 2002)
- **Black berry**- It enhances serum insulin activity and exhibits norm glycaemia and better glucose tolerance (Ravi, 2004)
- **Holy basil**- Acts by cortisol inhibiting potency (Gholap, 2004)
- **Pomegranate** - *Inhibits intestinal alpha-glucosidase activity, leading to anti-hyperglycaemic property (Li, 2005)*

**Stay Active, Lean and Healthy  
Eat Mindfully!!!**

**Thank You!**

