



# DIABETES CAN BE PREVENTED

Prof. Dalip Ragoobirsingh  
Director-UWI Diabetes Education Programme  
University of the West Indies  
Faculty of Medical Sciences  
Teaching & Research Complex (Level 2)  
Mona, Kingston 7, Jamaica  
Phone: (876) 927-2290 (o); (876) 836-8474 (c)  
E-mail: [dalip.ragoobirsingh@uwimona.edu.jm](mailto:dalip.ragoobirsingh@uwimona.edu.jm)

**DIABETESTAP**

Contact: Institute of Black Culture, Media and Sport  
Telephone: 0207 613 0979, Email: [claboju@aol.com](mailto:claboju@aol.com)

# KNOWING THE DESEASE

1. International Diabetes Federation Atlas, 5th Edition, 2012, [www.idf.org/diabetesatlas](http://www.idf.org/diabetesatlas).
2. Pan American Health Organization Steps Non-Communicable Disease Risk Factor Survey-Final Report, March 2012.
3. Health Survey for England 2004- The health of minority ethnic groups  
<http://www.hscic.gov.uk/article/2021/WebsiteSearch?productid=1401&q=HSE&infotype=13370&sort=Relevance&size=10&page=2&area=both#top>

# Definition and Diagnosis

Diabetes Mellitus is the clinical condition in which subjects have a persistently high blood sugar.

Common Symptoms includes:

- Frequent Urination
- Increased Hunger / Eating
- Increased Thirst
- Itching / Infections

## Prevalence

The prevalence of diabetes mellitus in the Caribbean ranges between 8-16%, averaging approximately 11 % in the adult population.<sup>1</sup>

Persons of Indian origin present with a higher level of diabetes, and this may vary according to sex.<sup>2</sup>

In the United Kingdom, the prevalence of doctor-diagnosed diabetes increased markedly with age, in men and women, 4.3 and 3.4 % of the general population respectively. It was more common in men than women for most ethnic groups and age groups.<sup>3</sup>

After adjusting for age, doctor-diagnosed diabetes was almost four times as likely in Bangladeshi men, and almost three times as likely in Pakistani and Indian men, as men in the general population.<sup>3</sup>

Among women, doctor-diagnosed diabetes was more than five times as likely among Pakistani women, at least three times as likely in Bangladeshi and two-and-a-half times as likely in Indian women compared with women in the general population. However, the prevalence of undiagnosed diabetes did not differ between different ethnic groups.<sup>3</sup>

Type 2 diabetes accounted for the majority of cases. Indian, Pakistani and Bangladeshi men, and women had higher risk of type 2 than the general population. Prevalence of type 2 diabetes increased with age among all groups.<sup>3</sup>

# Types

Diabetes Mellitus can be classified into three main types. However diabetes may also be secondary to other conditions or syndromes such as hormonal, chronic pancreatic or liver disease, pregnancy, malnutrition, or drugs/toxins such as steroids, thiazide, and alcohol.

## FACTORS FOR CLASSIFICATION AS TYPE 1 OR TYPE 2 DIABETES

TYPE 1 DIABETES	TYPE 2 DIABETES
Results from $\beta$ -cell destruction, usually leading to absolute Insulin deficiency	Results from a combination of insulin resistance and a progressive insulin secretory defect
Usually develops in youth but may appear at any age	The disease is usually found in middle and older age groups but may appear in younger age groups including children
Male/female incidence similar	Slight female preponderance
Patients are usually non-obese	60% of persons with type 2 DM are overweight or obese
Family history in 30-40% of cases	Family history in up to 90% of cases
	Levels of insulin may be high, normal or low
Patients prone to ketosis	Patients are less prone to ketosis
Found in 7-10% of people with diabetes in Caribbean countries	Most common type of diabetes found in Caribbean populations and worldwide
Antibodies to islet cells present in 80-95% of newly diagnosed cases	Relative insulin deficiency and insulin resistance



## GESTATIONAL DIABETES MELLITUS (GDM)

- GDM results from a combination of insulin resistance and increased demand due to pregnancy - related hormones.
- GDM is first recognized during the second trimester of pregnancy.
- GDM must be differentiated from “Pregnancy with pre-existing type 1 or type 2 diabetes”. The presence of elevated fasting and postprandial glucose levels during the first trimester may suggest the presence of diabetes prior to the pregnancy.
- After delivery, women with gestational diabetes mellitus generally revert to the normoglycaemic state but still remain at high risk for long-term diabetes.

## Risk Factors

Caribbean cultural practices greatly impact on the health, as acceptance of a number of life style behaviour favours development of overweight. The chief of which is the diet, both in terms of quantity and quality. Caribbean cuisine is also highly seasoned from the famous Jamaican jerk in the north to the curries of Trinidad and Guyana in the south. A lot of fried, fatty foods are also consumed. There is a fast growing culture of eating fast foods. Together these result in a high caloric intake in excess of bodily requirement. These culinary practices contribute to the incidence of obesity and consequently Type 2 diabetes mellitus.

### **Other cultural beliefs include:**

- Obesity is a sign of health and prosperity
- Fat women are considered more attractive

## Belly Fat

Fat in the abdomen and in ectopic sites (e.g. liver and muscle) is more likely to undergo lipolysis (breakdown) and release free fatty acids (FFAs). High FFAs can induce fatty liver, insulin resistance and beta cell (of the pancreas where insulin is produced) toxicity and hence death. Also with the fat accumulation, there is a higher turnover of the cells and necrotic (dying) fat cells attract macrophages. These macrophages produce inflammatory substances (cytokines e.g. TNF, IL-1, IL-6) that cause insulin resistance in the muscle and liver. Inflammation in fat cells reduces the hormone, adiponectin, which decreases insulin sensitivity. Postmenopausal women and hypo gonadal men have low sex hormones which also cause the accumulation of intra-abdominal fat. These changes eventually lead to onset of type 2 diabetes mellitus.

There are uncontrollable risk factors for type 2 diabetes mellitus. These include:

- Family History of Diabetes
- Ethnic Background- People of Asian and African are greater risk than those of other ethnic groups
- However, thankfully, there are also controllable risk factors which include:
  - Overweight or Obesity
  - Physical Inactivity

## How Do You Know?

Employing any one of the under mentioned diagnostic tools could help you determine whether you are overweight or worse obese.

***Body Mass Index = Weight (Kg)/ Height<sup>2</sup>(m)***

BMI $\leq$ 19	=	Undernourished
>19-24.9	=	OK
25-29.9	=	Overweight
>30	=	Obese

***Waist (this is the mid-point between the lower rib and the top of the hip bone):***

Female < 80cm

Male < 94

Reference - Henry F. (2004) Public policies to control obesity in the Caribbean, prepared for the Caribbean Commission for Health and Development, Caribbean Food and Nutrition Institute, PAHO, Kingston, Jamaica.



# Prevention is better....

## (i) Food-The staff of Life

In an effort to reduce the incidence of obesity and by extension the risk for type 2 diabetes mellitus, one is best advised to replace large unhealthy meals consisting of generous amounts of fried and fast foods with thick gravies and sauces with smaller, low caloric ones with increased amounts of fruits and vegetables. The following tips will greatly help:

The menus in this handout provide 1,200 (Overweight/Obese subjects) or 1800 (Normal weight individuals) calories per day.

### Meat or substitute

- Examples: lean meat, fish, poultry, beans, reduced-fat cheese, or egg (use mostly egg whites to restrict cholesterol)
- Weight for meat is after cooking
- A 3-oz portion would count as 3 servings
- 1-oz = 1 matchbox size cube of meat
- 3oz meat/poultry looks like a deck of cards. Substitute with 1/3 cup cooked beans/ veggie chunks, or 1/2 cup cooked lentils (dhals/daal) or 2.5"x2.5" fish including saltfish.
- Lentils/beans/peas are excellent sources of protein and soluble fibre, but only if you prepare them with very little oil/fat.

### Staple foods

- Examples: breads, roti, grains, starchy vegetables (eg. yam, green bananas) or other carbohydrates.

- Eat smaller portions of staple foods that are prepared with added fats/oils
- Substitute high fibre staples, eg. 2 slices reduced calorie (40 calories/slice) bread for 1 slice regular bread (90 calories/slice). Reduce rice/breads if potato/starchy vegetables are included elsewhere in the meal.
- Increase fibre content of staple foods, eg. add oats/wheat germ to flour used in recipes. Avoid adding fat/oil when preparing rice, dumplings, chapatti, etc.
- 1 serving = 1 slice bread, 1 thin slice hard-dough bread, ¼ (9" diameter) roti, ½ cup cooked rice/pasta, ½ cup porridge (2tbsp cereal cooked with water), 1 medium green banana/potato, 1 small corn, 3 hard crackers or 2 tea biscuits

## Dairy

- Examples: fat-free or 1% milk or "light" yogurt with less than 100 Calories.
- Use low-fat or skimmed varieties of milk.
- 1 serving = ½ cup low fat milk, ¼ cup evaporated milk, 2tbsp powdered milk
- To reduce saturated fat, consume tofu in place of paneer

## Non-starchy or leafy vegetables

- Examples: lettuce, callaloo, cucumber, chocho broccoli, cabbage, carrots, cauliflower, green beans, tomatoes, etc.
- Other vegetables which give about 3kcal per ½ serving are pumpkin, beets, canned mixed vegetables, string beans
- All vegetables are healthy, but only if prepared/consumed with little or no oil/fat/salt.

## Fats and Oils

- Examples: margarine, butter, ghee salad dressing, mayonnaise, coconut milk/cream, etc.
- Ackee, avocado, nuts, and olives are healthier fats, however avoid excessive intake of these as they are high in calories and can lead to weight gain.
- Substitute fat-free and low-fat options, and avoid using any of these added fats when preparing food.
- Limit consumption of pastries and savoury snacks (eg. poulouri, mathri, chewda). These are made with saturated fat, trans-fats and re-used cooking oils.
- 1 serving = 1 tsp margarine/butter/mayonnaise/oil, 3 pieces of ackee, 1 tsp peanut butter, bacon -1 rasher

## “Free” foods (\*)

“Free” foods are foods with fewer than 20 calories per serving with less than 5grams carbohydrate and little if any fat. Have no more than 3 servings per day.

Examples include:

- Bouillon or broth (regular or low sodium)
- Cocoa powder (unsweetened)
- Coffee, tea
- Diet soda, Diet tonic water, Club Soda
- Sugar-free drink mixes (such as sugar free Kool-Aid or Crystal Light)
- Flavored water (carbohydrate free)
- Sugar-free gelatins or candy
- Sugar substitutes
- Green salads
- 1 tablespoon Fat-free mayonnaise/ fat-free salad dressing/ fat-free cream cheese/ fat-free creamer

### Food Preparation tips

- Try to prepare foods mostly by grilling (eg. Barbecue/jerk), baking (eg in a Tandoor), roasting, and steaming. Always try to include vegetables and/or fruit with entrees, and avoid adding cream/butter or batters to food.
- Avoid deep frying or cooking with oil/fat

# General Rules

- Always try to eat at the same time each day, especially if you are taking medication for your diabetes.
- For some persons, consuming small meals more frequently is more tolerable than eating 2-3 larger meals per day. Please remember that it is unhealthy to skip meals, especially breakfast.
- Initially, you should measure your foods after they are cooked/prepared using standard measuring utensils (eg. measuring cups and spoons, ruler) until you are able to estimate portion sizes.
- Become familiar with foods that are similar and the desired portions you should be having. Foods and meals should be portion-controlled, and snacks should be accounted for as part of your total intake.
- Eat a variety of foods from each group. Portion sizes for each food will vary depending on the amounts of simple sugars, moisture content, fibre, and/or fat. You are encouraged to obtain or look through a calorie counter (online or published) as well as read your food labels so you can understand more about the foods you eat.
- Avoid sweets and added sugars (including sugar, honey, molasses, syrup, jams and jellies) as these will affect your blood glucose levels.
- Avoid consuming high fat foods (especially those high in saturated fat and/or cholesterol) as well as foods that are high in salt. Very often, persons with diabetes are often also at risk for high cholesterol and/or high blood pressure (hypertension).
- Manage your weight by watching your portions and avoid eating in excess by monitoring snacks you have in between meals.
- Exercise is an important part of managing your body weight and blood sugar. Try to move about more often (eg. walking, housework, gardening, etc.) and keep hydrated. Exercise at the cooler times of the day and do not exercise on an empty stomach.
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# HOW TO DETERMINE PORTION SIZES



## Spoons/oz

1 Tablespoon - about the size of the top half of your thumb (1 ½ joints)

1 Teaspoon – about half the size of the top joint of your thumb (ie thumb nail upwards)

25 gm of flour (atta) is approximately what can be held in an average woman's palm

## 1 ounce (28 g)

approximately a inch cube of cheese

volume of four stacked dice

slice of cheese is about the size of a 3 1/2 inch “floppy” disk

chunk of cheese is about as thick as 2 dominoes

1 closed handful (palm) of nuts

## 2 ounces (57g)

1 small chicken leg or thigh

1 /2 cup of cottage cheese or tuna

## 3 ounces (85 g)

3oz serving of meat is about the size of a deck of playing cards (3 exchanges)

1 /2 of whole chicken breast

1 medium pork chop

1 small hamburger

1 unbreaded fish fillet is about the length and thickness of a checkbook

## 1/2 cup (118 ml)

1 small/medium fruit or vegetables can fit in the palm of your hand

about the volume of a tennis ball

½ larger fruit (eg. Banana, grapefruit, solo papaya)

## 1 cup (236 ml)

about the size of a woman's fist

about the size of a tennis ball

breakfast cereal goes halfway up the side of a standard cereal bowl (4”diameter)

broccoli is about the size of a light bulb

## Example meal plans

Meal		1200kcal	1800kcal
Breakfast	Vegetable omelet (1 egg or ¼ cup egg substitute)	1egg	1 egg
	onion, tomato, pepper	1 slice each	1 slice each
	fat-free cooking spray (*)		
	Whole wheat toast	1slice	2slices
	margarine	1tsp	1tsp
	Fat-free or 2% milk <u>or</u> unsweetened plain yogurt	½ cup	½ cup
	Ripe Banana	-	1
Morning snack	Orange or other fruit	1	-
	Tea Biscuit	-	1
Lunch	Fish (prepared with celery, onions, etc)	2oz	3oz
	pasta	½ cup	¾ cup
	small baked sweet potato	¼ cup	½ cup
	Green leafy vegetables (raw or cooked) eg Salad	As desired	As desired
	Boiled Pumpkin	½ cup	½ cup
	Almonds, unsalted roasted	7	12
	Mayonnaise, low-fat	1tsp	2tsp
	Naseberry	1 fruit	1 fruit
Afternoon snack	Fruit	1	1
	Low-fat yogurt	-	½ cup
Evening Meal	Boneless, skinless chicken breast	3oz	3oz
	Rice, plain, cooked without fat/oil	1/3 cup	1/2 cup
	Small slice breadfruit	1 thin slice	1 slice
	Green leafy vegetables (raw or cooked) eg Salad	As desired	As desired
	Fat-free salad dressing (*)	1tbsp	1tbsp
	Fruit	-	1
	Dairy/milk, yogurt	½ cup	-
Evening Snack	3 Tea biscuits	1	1
	Tea		

## Example 1800 kcal meal plan

MEAL	FOOD	1800kcal
	Wheat chapatis (6inch diameter)	2
	Small piece of cheese	15g/1tbsp
	Small pat of butter ( 5 gms.)	5g/1tsp
	Cooked mixed vegetables	½ cup
	Dahi/Yogurt ( skim milk based)	½ cup
	Tea/coffee with a little milk no sugar	1-2 cups
Morning Snack	Banana medium size	½ fruit
Lunch	Strained soup	½ cup
	Wheat chapatis(6inch diameter)	2
	Masoor pulav	½ cup
	Cauliflower bhaji	½ cup
	Cooked bhindi/okra	½ cup
	Tur dal ( thick)	½ cup
	Dahi/Yogurt ( skimmed milk)	½ cup
	Salad from Free foods List	
Oil/ghee for cooking	1 ½ tsp	
Afternoon Snack	Small idlis (2-3inch diameter, rice cake)	2
	Cubed water melon	1 ¼ cup
	Tea/coffee with little milk ( no sugar)	1 cup
Evening Meal	Bajri chapatis (6inch diameter)	2
	Cooked rice	1 cup
	Fenugreek (methi) bhaji	½ cup
	(Cluster beans) gawar bhaji	½ cup
	Arhar dal ( thin watery)	1 cup
	Dahi/Yogurt ( skim milk base)	1 cup
	Salad from Free Food List	
Oil/ghee for cooking	1 ½ tsp	
Evening Snack	Whole milk	½ cup

# Prevention is better....

## **(ii) Fit For Life**

Low impact exercises such as walking, cycling and swimming should be done for 20-30 minutes at least four (4) times weekly. It is important to note that people over forty years of age should not perform exercises which require them to land heavily on their feet. This is because the small bones, at this age, begin to undergo osteoporotic changes which increase their vulnerability to fractures. Hence, individuals in this age group are best advised to do low impact exercises thereby minimizing this risk.

## **(iii) Social Habits**

Other lifestyle changes which must accompany those mentioned above (diet and exercise), include reduction in alcohol consumption and cessation of cigarette smoking.

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## **Conclusion**

Subjects who have the uncontrollable risk factors for type 2 diabetes mellitus must endeavor to control those that they can i.e. their weight and increased physical activity. The latter, assuming the necessary dietary changes, will result in decrease in body weight, blood sugar, blood cholesterol, blood pressure and eventually in medication (if already diabetic) required. This will certainly go a long way in preventing the onset of diabetes type 2 in people of colour.

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Telephone: 0207 613 0979, Email: claboju@aol.com