

DIABETES MONITOR

2009 Issue No. 2



Dr. Mohan's[®]
DIABETES SPECIALITIES CENTRE



WHO Collaborating Centre for Non-communicable Diseases Prevention & Control

Published by:

Dr. V. Mohan,

M.D., F.R.C.P (UK, Glasg, Edinberg), Ph.D., D.Sc., FNASC
&

Dr. M. Rema,

M.B.B.S., D.O., Ph.D., FABMS, FMSF

on behalf of DIRECT,
a Charitable Trust for diabetes.

Promoted by:



Correspondence:

Dr. R. Pradeepa, M.Sc., Ph.D.
Editor

Mrs. K. S. Chella, M.Phil., MBA.,
Co-Editor

Diabetes Monitor,
6B, Conran Smith Road,
Gopalapuram,
Chennai - 600 086.
Ph : (044) 28359048 - 53
Fax : (044) 28350935
Email : drmohans@vsnl.net
Website : drmohansdiabetes.com

Designed & Printed at
Computer Graphics,
Nungambakkam,
Chennai - 600 034.
Ph : 28252508, 28270287

PHYSICAL FITNESS CONSULTANCY NOW AVAILABLE AT DR. MOHAN'S DIABETES SPECIALITIES CENTRE!



Group Fitness Program

At Dr. Mohan's Diabetes Specialities Centre, we offer a complete fitness facility for those seeking to enhance their health through regular exercise and education. The department of physical fitness emphasizes the importance of prevention and treatment for persons with diabetes. It provides professional advice to enhance flexibility and strength. Each individual after initially undergoing a health evaluation by the physician, will consult out fitness consultant and a customized Fitness Programme will be developed to meet the fitness and health goals of the individuals with pre-diabetes and diabetes. The programme will be designed to delay the onset of diabetes, help in control of diabetes, prevent diabetic complications and slow the progression of complications.

Pulse : News & Events

The four major components of fitness programme at our centre include cardiovascular fitness, muscular strength, endurance and flexibility. Cardiovascular fitness refers to the fitness level of heart, lungs, veins and arteries which are responsible for processing and transporting oxygen to muscles. As one's fitness improves, the heart will become more efficient, being able to pump more blood with fewer contractions. Muscular strength is necessary to perform fundamental movements of everyday life. Endurance (stamina) is necessary to continue to walk or do work without becoming tired. Both strength and stamina are essential in order to maintain mobility and functionality, particularly in older age. Furthermore muscular tissue uses more calories than inactive tissues which is good news for those trying to control their weight. Resistance exercises improve

muscular strength and endurance. Flexibility is critical, yet often overlooked. Flexibility is the range of movement at a joint (where two or more bones meet). Without flexibility one will suffer from increased stiffness and so an inability to perform simple tasks easily, poor posture and muscular tension, particularly in older age. Exercises to improve flexibility include stretching and yoga.

Our experienced consultants Mr. R. Balaji, Mr. L. Ramesh, Mr. V. Baskar, Ms. S. Deepa and Ms. P. Bavithra are on site and ready to assist patients in reaching their personal fitness goals. Persons with pre-diabetes or diabetes interested in pursuing a healthier lifestyle can contact one of our representatives to learn more about our facility. Mr. Balaji has also provided an article on '**Fitness in Managing Diabetes**' [page no: 8 of this issue] for the benefit of individuals with diabetes.

HOURS OF OPERATION:

Group fitness classes –

Gopalapuram, Vellore & Tambaram Centres - Monday–Saturday: 10:30 a.m. to 11:30 a.m.

Annanagar Centre - Monday–Sunday: 10:00 a.m. to 11:30 a.m.

Personalized fitness programme –

Gopalapuram Centre - Monday–Saturday – 8.30 a.m. to 4:30 p.m.



Individualised Fitness program



Fitness Consultation



Diabetes

2

Monitor



DR. V. MOHAN PARTICIPATES IN WHO SEANET-NCD MEETING



Our Chairman **Dr. V. Mohan** participated in '**Strengthening Partnerships for Integrated Prevention and Control of Non communicable Diseases [NCDs]**'- a **SEANET-NCD Meeting** held at Chandigarh from 15-19 June 2009. The objectives of this meeting was to review the progress in implementing the Resolution of the 60th Session of the Regional Committee of the WHO South-East Asia [SEA] Region on scaling up Prevention and Control of NCDs and to review and comment on a draft global set of recommendations on the marketing of food and non-alcoholic beverages to children. Dr. V. Mohan delivered lectures on "**Future Directions in NCD (Diabetes) Surveillance**" and the "**Role of WHO collaborating centres in addressing NCD Public Health and Research agenda**". His talk highlighted the activities of Dr. Mohan's Diabetes Specialities Centre - WHO collaborating centre in Prevention and Control of NCD's. Eminent scientists from several South East Asian countries participated in this meeting.

Ms. R. SUBASHINI successfully completed Post Graduate Diploma in Biostatistics and Data Management



Ms. R. Subashini, Research Assistant, Epidemiology, MDRF was awarded **Post Graduate Diploma in Biostatistics and Data Management** by **Indian Institute of Public Health, Hyderabad** during the academic period- August 2008 to July 2009.



Diabetes Management



START COUNTING CARBOHYDRATE

Key words:

- ★ Counting carbohydrates in the foods will help to control the blood glucose.
- ★ Carbohydrate counting is a method where we count the amount of carbohydrate of each meal and snack.
- ★ Weighing and measuring will help to accurately estimate serving sizes and weights.

Food contains carbohydrates, fats and proteins as source of energy, plus many other important ingredients like vitamins and minerals. The main nutrient in food that affects blood glucose level is carbohydrate. This article will introduce you to count the grams of carbohydrate in the correct dose one needs for a meal. Counting carbohydrates in the foods will help to control the blood glucose. This is because carbohydrates raise the blood glucose more than any other nutrient. Carbohydrates (sugars and starches) are converted to blood glucose quickly—within an hour or so after a meal. Therefore, the level of glucose in the blood after a meal will be directly related to the amount of carbohydrate just eaten. While fats and proteins in a meal are eventually converted by the body into glucose to use for energy.

What is carbohydrate counting?

Carbohydrate counting is a method where we count the amount of carbohydrate of each meal and snack. The balance between the amounts of carbohydrates we eat and insulin determines how much the blood glucose level goes up after meals. This means one need to

know what foods have carbohydrates and how many carbohydrate servings should be taken to keep the blood glucose within the target range. It is easy to learn and use.

1 carbohydrate counting = 15 grams of carbohydrate in food

When we are really good in this we can have lot of freedom to our food choices with better control of blood glucose especially combined with insulin pump.

Carbohydrates..... What are they?

Carbohydrates, as starches and sugar are found in:

- Sugar, honey and sugar sweetened foods
- Grain products like idli, dosai, uppma, bread, rice, chappathi, breakfast cereal etc
- Dairy products particularly milk, curd, yogurt etc.,
- Fruits and certain vegetables



When these carbohydrate rich foods are taken, it causes a rise in blood glucose because all carbohydrates eventually turn to glucose in the blood. We need to pay special attention to portion of carbohydrate in a meal. For example if we eat one idli the blood glucose raises. If we eat three idlis, the blood glucose will rise even more. As more and more carbohydrate is taken, more insulin is required hence dosage of anti diabetic drugs (OHA/ insulin) needs to be altered to meet the amount of carbohydrate eaten.



Diabetes Management

Carbohydrate Counting Methods:

Method	Description	Comment
Count carbs	Count serving of starch/rice, bread, fruit and milk considering them all to be equal in <i>carb</i> value (~15g per <i>Carb</i>). Vegetables may or may not be counted (1/3 <i>Carb</i> per vegetable serving)	Easier but least accurate. Requires math skills and use exchange groups and portions
Count Carbs for all foods yielding glucose	Count serving of starch/rice, bread, fruit and milk. Serving as one <i>Carb</i> each. Count each vegetable and meat exchange as ½ <i>Carb</i>	Easier but least accurate. Requires math skills and use exchange groups and portions
Count grams of carbohydrates	Add carbohydrate gram values for all foods eaten to obtain carbohydrate total for meal. Obtain values from reliable food list, reference books and food products nutritional label.	Very accurate but more time consuming
Calculate available glucose for all foods eaten	Count grams of carbohydrate for all food eaten as above. Then calculate all glucose available from protein and add this value to the carbohydrate gram to obtain the meal total.	Most difficult but accurate and precise.

Sources of information

To count carbohydrates, we need the Information about the carbohydrate content of the foods we eat and measuring equipment to carefully measure the portions.

Food exchange lists: Food exchanges assign an average carbohydrate value per exchange to all the foods in each food group:

- ▲ Starches/Bread = 1.5 grams
- ▲ Fruit = 1.5 grams
- ▲ Milk = 12 grams
- ▲ Vegetable = 5 grams
- ▲ Fats = 0 grams
- ▲ Meat-Protein = 0 grams

Note: Each meat / protein serving contain 7 gram of protein. As described earlier about

60% protein is eventually converted to glucose. Also some high protein foods contain carbohydrate.

Exchange values are average; they are not accurate for every food in a group. When the carbohydrate content of whole meal is estimated using exchanges, there may be a fairly big difference between the exchange estimate and the actual value.

Food labels: Most packed and processed foods have nutrition information labels. The label lists the amount of calories, carbohydrate, protein and fat in a specified serving of the food, as well as other information. Here is a sample label showing the nutritional facts for unsweetened soya milk.



Diabetes Management

UNSWEETENED SOYAMILK NUTRITIONAL INFORMATION

Serving size 200 ml

Energy (K cal)	71
Protein (g)	7
Fat (g)	3.1
Carbohydrate (g)	3.8
Sodium (mg)	30
Potassium (mg)	248
Calcium (mg)	70

We can use the Total Carbohydrate values right off the label for most foods. However, because the 'Dietary Fiber' is not digested (and therefore contributes no glucose), the total can cause to overestimate the amount of glucose yielded by high fiber foods. So we have to subtract the grams of dietary fiber from the total carbohydrate to find more precise value for foods that contain more than 5 grams of fiber per serving.

Food composition lists and books: Table given below list the calorie and carbohydrate content of some common south Indian foods.

FOOD ITEM	Weight(g)	Calorie	Carbohydrate (g)
Dosa	84	254	42.0
Chips (Potato)	100	546	49.3
Biscuit (cream cracker)	100	440	68.3
Biscuit	100	457	74.8
Cake (Sponge)	100	459	52.4
Chat	100	109	12.5
Chikki	60	290	37.0
Halwa	100	322	42.0
Honey	100	288	76.4
Ice Cream (Chocolate)	100	277	28.1
Ice Cream (Vanilla)	100	194	24.4
Naan	100	336	50.1
Paratha	100	297	47.0
Paratha (Potato) /Aloo Paratha	90	213	35.0
Macroni	100	348	75.8
Samosa	65	207	21.0
Upma	160	260	33.0
Vada (Dahi)	166	343	31.0
Yoghurt (Low Fat)	100	56	7.5

Thus, like any new skills, counting carbohydrates will take time and effort to learn. Weighing and measuring will help to train our eyes to accurately estimate serving sizes and weights. Count the carbohydrate content in the meal to explore the reason for the blood glucose rise. Carbohydrate counting combined with Insulin Pump therapy is an excellent tool for

- ❖ good glycemic control
- ❖ prevent diabetes complications
- ❖ wider food choices
- ❖ flexible lifestyle
- ❖ good quality of life

However our overall health depends upon choosing foods wisely. To feel and look the best, one should eat mostly 'nutrient dense' foods like whole grains, low calorie vegetables and nonfat or low fat milk and protein rich foods. 'Nutrient dense' foods are one that provides a lot of vitamins and other nutrients for the calorie content.



Thangamani K G T
Chief Executive Dietitian
DMDSC
"Choose food wisely for better tomorrow"



Diabetes

6

Monitor



Salty Subject

Everyone knows that a regular soup is loaded with sodium, but what about the foods that don't taste salty, particularly foods like noodles, cottage cheese, frozen products such as parathas, ready to eat and ready to cook foods. Salt can be hidden in unexpected places. Recent findings from the Chennai Urban Rural Epidemiology Study (CURES) conducted by us showed that high

sodium (salt) diet can cause high blood pressure (BP), a risk factor for CVD. Guidelines recommend not more than 2300mg of sodium / day for general population and for the people with BP the recommended level is far less than 1500mg/d. This includes both the salt we add and the sodium that is already present in foods we eat.

Comparison



Table salt
(2300mg /1 teaspoon)



Soya sauce
(1,029mg/1 Tablespoon)



Soups
(1106-5220mg/100ml)



Noodles
(860.8mg/100g)



Cheese/Butter
(1245-1500mg /100g)

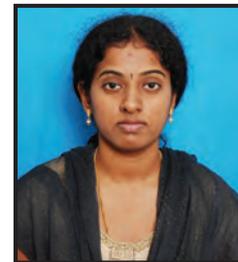


Frozen Parathas
(500-800mg /100g)

“Be cautious”

- ❖ Generally lower fat versions of packaged foods often have higher sodium content than their higher fat counterparts
- ❖ Check the 'Nutrition & ingredient label for the words 'MSG', baking soda,

baking powder & garlic salt.



Radhika G, M.Sc., R.D.,
Sr. Clinical Research
Nutritionist, MDRF

Diabetes Management

FITNESS IN MANAGING DIABETES



Key Points:

- ✦ Exercise delays the onset of diabetes, helps in control of diabetes and prevents diabetic complications.
- ✦ Exercise should include a warm up, a cool down and stretching of the muscles.
- ✦ Blood sugar level should be tested before and after exercising.

Exercise forms one of the cornerstones of management of diabetes. A regular program can delay the onset of diabetes, help in control of diabetes, prevent diabetic complications and slow the progression of complications. Unfortunately, many patients with diabetes find that they are unable to exercise, in spite of their best intentions. This might be due to lack of space and time or for want of adequate facilities. However, most people find it difficult to exercise without proper guidance. Also, many diabetic patients have other complications, which may prevent them from doing all the types of exercise that a non-diabetic individual can do. Never start a new exercise program without consulting the physician or fitness consultant.

Why exercise?

- ✦ It lowers blood pressure.
- ✦ It helps to correct abnormal blood lipids by raising the good (HDL) cholesterol level.
- ✦ It strengthens the heart and circulatory system.
- ✦ It can decrease body fat and increase muscle tone.
- ✦ It relieves tension, stress and helps the patient to feel relaxed.
- ✦ It increases basal metabolic rate and helps in weight loss.
- ✦ It improves the general sense of well-being.

- ✦ In some people, exercise combined with a meal plan, can control Type 2 Diabetes without the need for medications.

How to exercise:

There are some basic principles that govern the world of exercise, and knowing them can help to set up and manipulate different components of exercise. These include:

- ✦ **Frequency** - how often we exercise
- ✦ **Intensity** - how hard we exercise
- ✦ **Time** - how long we exercise
- ✦ **Type** - the type of exercise we're doing (e.g., running, walking, etc.)



When we workout at sufficient intensity, time and frequency, our body will improve (also called the **Training Effect**) and we'll start seeing changes in our weight, body fat percentage, cardio endurance and strength. When our body adjusts to our current levels, it's time to manipulate one or more of them. For example, if we've been walking 3 times a week for 20 minutes, we can change our program by implementing one or more of the following ideas:

Frequency - We can add one more day of walking.

Intensity - We can add short bursts of jogging or speed walking.

Time - We can add 10-15 minutes to our usual workout time



Diabetes

8

Monitor



Diabetes Management

Type - We can do a different activity such as cycling, swimming or aerobics

Exercise should also include a warm up, a cool down and stretching of the muscles that we are going to use. Furthermore, having some understanding about exercise will make it more enjoyable and motivated.



Warming up and cooling down: Depending on the exercise, warm up and cool down could be the same activity, but performed at a less intense level. For example, if we planned a walk, we have to walk at a slower pace for warm up and cool down.

Warming up increases the blood flow to the muscles and decreases the chance of injuries to the muscles or joints. Warm up should be done for 5-10 minutes at a very low intensity.

Cooling down prevents blood pooling in the extremities, e.g. legs; it should be performed for about 5 minutes, gradually reducing the intensity level.

Stretching: We have to stretch the muscles after warm up and cool down. Stretching is very important: it reduces risk of injury and stiffness, makes muscles more able to perform the exercise and improves flexibility. A common mistake is to stretch muscles before they warm.

When to exercise: Early morning is probably the best time to do exercise. Early morning exercise makes one fresh for the day's work. But it doesn't mean that we have to do only in the morning. Morning or evening it doesn't matter as long we do our physical activity.

So don't give excuses. We all know the benefits of being active but we always give excuses not to do it because we're busy and the lack of time. Being extra active can increase the number of calories you burn. There are many ways to be extra active.

- ★ Walk around while you talk on the phone.
- ★ Play with the kids.
- ★ Take the dog for a walk.
- ★ Get up to change the TV channel instead of using the remote control.
- ★ Work in the garden.
- ★ Clean the house.

- ★ Wash the car.
- ★ Park at the far end of the shopping center lot and walk to the store.
- ★ At the grocery store, walk down every aisle.
- ★ At work, walk over to see a co-worker instead of calling or emailing.
- ★ Take the stairs instead of the elevator.
- ★ Stretch or walk around instead of taking a coffee break and eating.



Dos and Don'ts of Exercise:

Do's:

- ★ Talk to the doctor about the right exercise to do.
- ★ Check the blood sugar level before and after exercising.
- ★ Check the feet for blisters or sores before and after exercising.
- ★ Wear the proper shoes and socks.
- ★ Drink plenty of fluid before, during and after exercising.
- ★ Warm up before exercising and cool down afterward.
- ★ Have a snack handy in case your blood sugar level drops too low.
- ★ Carry a diabetes ID card so that proper treatment can be given in case of an injury.

Don'ts:

- ◆ Do not exercise if sick or experiencing pain due to exercise.
- ◆ Do not exercise if the blood sugar is over 300mg/dl.

In conclusion, regular exercise, physical activity and fitness are critically essential for sound health and well being of people of both young and old. Spend less time in activities that use little energy like watching television and playing video games, and more time in physical activities.

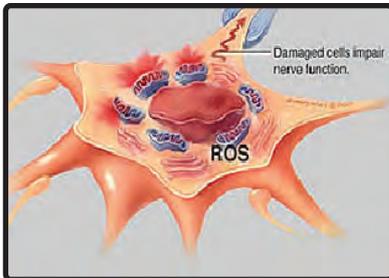


Balaji R.

Fitness Consultant, DMDSC



Diabetes Management



Diabetic Neuropathy

- ✎ Mechanical injury to nerves
- ✎ Inherited traits
- ✎ Lifestyle factors

Symptoms:

- ☞ Numbness, tingling, or pain in the toes, feet, legs, hands, arms, and fingers
- ☞ Wasting of the muscles of the feet or hands
- ☞ Indigestion, nausea, or vomiting
- ☞ Diarrhea or constipation
- ☞ Dizziness or faintness due to a drop in blood pressure after standing or sitting up
- ☞ Problems with urination
- ☞ Erectile dysfunction in men or vaginal dryness in women
- ☞ Weakness

Symptoms that are not due to neuropathy, but often accompany it, include weight loss and depression

Classification:

Diabetic neuropathy can be classified as

- 🔴 Peripheral Neuropathy
- 🔴 Autonomic Neuropathy
- 🔴 Proximal Neuropathy.
- 🔴 Focal Neuropathy.

Peripheral neuropathy

Peripheral neuropathy, the most common type of diabetic neuropathy in which the peripheral nervous system is affected. It causes pain or loss of feeling and it affects legs, feet, toes, hand and arms.

Autonomic neuropathy

Autonomic neuropathy (also called visceral neuropathy) is a disease of the non-

Key Points:

- ✎ Diabetic neuropathies are neuropathic disorders that are associated with diabetes mellitus.
- ✎ People with diabetes can develop nerve problems at any time.
- ✎ Diabetic neuropathies also appear in persons with high blood fat and blood pressure and those who are over weight.

Diabetic neuropathies are a family of nerve disorders that are associated with diabetes mellitus. These conditions are thought to result from diabetic microvascular injury involving small blood vessels that supply to nerves. About 60 to 70 percent of people with diabetes have some form of neuropathy. People with diabetes can develop nerve problems at any time, but risk rises with age and longer duration of diabetes. Diabetic neuropathies also appear to be more common in people who have problems controlling their blood glucose, also called blood sugar, as well as those with high levels of blood fat and blood pressure and those who are overweight.

Causes:

The causes are probably different for different types of diabetic neuropathy. Nerve damage is likely due to a combination of factors:

- ✎ Metabolic factors
- ✎ Neurovascular factors
- ✎ Autoimmune factors



Diabetes Management

voluntary, non-sensory nervous system (i.e. the autonomic nervous system) affecting mostly the internal organs such as the bladder muscles, the cardiovascular system, the digestive tract, and the genital organs. These nerves are not under a person's conscious control and function automatically. It can also cause hypoglycemia unawareness

- ◆ Digestive system
- ◆ Urinary tract
- ◆ Sex organs
- ◆ Sweat glands
- ◆ Eyes
- ◆ Lungs

Proximal neuropathy

Proximal neuropathy causes pain in the proximal regions like thighs, hips, buttocks and causes weakness in the legs.

Focal neuropathy

Focal neuropathy results in the sudden weakness of one nerve or a group of nerves, causing muscle weakness or pain. Any nerve in the body can be affected.

- ⊙ Eyes
- ⊙ Facial muscles
- ⊙ Ears
- ⊙ Pelvis and lower back
- ⊙ Chest
- ⊙ Abdomen
- ⊙ Thighs
- ⊙ Legs
- ⊙ Feet

Investigations:

The tests that are available to check neuropathies are:

- ★ Diabetic peripheral neuropathy - **Nerve Conduction study**
- ★ Diabetic autonomic neuropathy - **Autonomic Neuropathy test**



Suganthi .N
Neuro Science Technologist, MDRF



DIABETES WORD SEARCH

Fun Corner

Try to find the words provided below on this board:
Words : Diabetes, Blood sugar, Insulin, Management, Exercise, Carbohydrates



(Key in Page 15)



Patient Page

THE SILVER JUBILEE PATIENT

As old is gold, I have twenty five years
Of intimacy, with the dreadful 'Diabetes'
With bundle of experiences and rich package of information.
Very much I was disturbed and disheartened,
At the onset of silent killer's first love,
But our diabetes centre came to my rescue,
Advised and assured, with all awareness
Thy body guards to follow,
As Diet, Medicine – Exercise,
With whom I never parted till now.
With this the 'sleeping snake' got afraid of me
And remained at a respectable distance from me.
Even now at 75, blessed by god and the centre
My nerves are vital, arteries are alert
Eyes can see in dark and heart jumps with joy
I walk to my capacity, and eat what that suits me
I do regularly Pranayama and Aerobic exercises
Sitting in the chair or lying on the bed,
I check, my blood sugar level with glucometer
And go for periodic check up to the doctors
Who are living Gods to me,
And whom God sent, to rescue me from “Diabetes”



C. Kuppuramaiah
Patient



Ques 1: My doctor has advised me to include more fibre in the diet – does it help in controlling diabetes?

Ans: High fibre diet definitely has got many advantages mainly for diabetic individuals, which includes:

1. Preventing the sudden rise of blood glucose after food.
2. Reduction of cholesterol

Your Questions, Answered!

Frequently asked questions

3. Slow, continuous absorption of carbohydrate thereby preventing low sugar reaction.
4. Weight reduction, which in turn improves diabetes control
5. Preventing constipation

Ques 2: I have diabetes for the past 2 years, will it shorten my lifespan?

Ans: The average lifespan for people with diabetes is slightly shorter than for non diabetic individuals. Most of the increased risk of death comes from the complications of diabetes, including heart, kidney, and



Diabetes

12

Monitor



Your Questions, Answered!

nerve damage. Fortunately, we now know that careful monitoring and maintaining blood sugar levels close to normal values can greatly reduce the risk of most of these devastating complications. Additionally, careful attention to keeping blood pressure and cholesterol levels in the normal range also improves lifespan for people with diabetes. As more and better therapies and strategies for monitoring blood sugar levels are in use, the situation has improved even more and people with diabetes can have a normal lifespan like their non-diabetic counterparts.

Ques 3: I have diabetes for the past 6 months, I have been advised by my diabetologist to keep blood glucose levels within a normal range. Why is it important?

Ans: High blood glucose levels can cause many long-term health problems. Eye, kidney, nerve and heart disease are directly related to high blood glucose levels. It has been proven that keeping glucose levels within a normal range can slow the progression or even prevent these complications from occurring. If one adheres to the following, one can maintain good control of blood sugar.

- ✦ Follow a meal plan
- ✦ Take your medications and exercise as directed by your physician
- ✦ Test your blood glucose regularly and share your results with your healthcare team
- ✦ Visit your doctor to have the tests necessary to monitor your diabetes including blood pressure, urine protein, blood glucose and cholesterol
- ✦ See an eye doctor and foot doctor at least once a year, or more frequently as directed

- ✦ Have regular dental exams
- ✦ Examine your feet every day and report any abnormalities
- ✦ Do not smoke
- ✦ Drink alcohol in moderation, if approved by your doctor

Ques 4: Is there any way to treat diabetes other than with insulin injections?

Ans: There are two main forms of diabetes - Type 1 and Type 2 diabetes. In Type 1 diabetes, often called as juvenile or insulin-dependent diabetes, cells of the pancreas produce little or no insulin, the hormone that allows sugar (glucose) to enter body cells. Type 2 diabetes or adult-onset diabetes is characterized by insulin resistance and/or abnormal insulin secretion, either of which may predominate. Type 2 diabetes may be treated with a balanced diet, regular exercise and oral medication under a diabetologist's care, but people with Type 1 need regular doses of insulin.

Ques 5: Why is it important to eat vegetable?

Ans: A diet rich in fruits and vegetables may reduce risk for stroke, cardiovascular diseases, Type 2 diabetes and coronary heart disease helps to decrease bone loss, lower calorie intake and cancer. Nutrients in most vegetables are naturally low in fat and calories. They also contain potassium, dietary fiber, vitamin A, vitamin E and vitamin C. A diet rich in potassium may help to maintain healthy blood pressure. Dietary fibre from vegetable, as part of an overall healthy diet, helps reduce blood cholesterol levels and may lower risk of heart disease. Folate helps the body form red blood cells. Vitamin A keeps eyes and skin healthy and helps to protect against infections.



Awards

DOCTORAL AWARD

MDRF AND DMDSF FAMILY CONGRATULATES



Dr. D. Bodhini

For being awarded the Ph.D., in Biochemistry and Molecular Biology by the University of Madras, Chennai

On 28th July 2009 **Mrs. D. Bodhini**, supervised by **Dr. Radha Venkatesan**, Head, Molecular Genetics, Department of Biochemistry and Molecular Biology, Madras Diabetes Research Foundation was awarded her doctoral degree for her thesis entitled “Study of Association of candidate genes related to insulin signaling and insulin secretion with Type 2 diabetes in an urban South Indian Population.

We are Proud of You!

Hearty Congratulations
To



Dr. R. Hemalatha

Consultant Ophthalmologist
Dr. Mohan's Diabetes Specialities Centre, Chennai

*For being awarded the FRCS in
Ophthalmology by the Royal College of
Surgeons (Glasgow)*



Diabetes

14

Monitor



PILLARS OF DMDSC



Mrs. G. Kayalvizhi, after completing her Diploma in Electrocardiogram joined our institution in 1993 as an **ECG/DOPPLER technician**. She has also completed her undergraduate course in Psychology. In addition to ECG and Doppler she is also handling Biothesiometry studies to diagnose neuropathy and the Treadmill test [TMT] also called as Exercise Stress Test. Kayalvizhi affectionately known as Kayal by her colleagues, is warm and friendly to the patients. She adapts herself to whatever work that has been assigned to her and gives her fullest contribution to it. She is very professional and courteous in her work. Kayal is an easy going person with unique personal attributes towards others.



Mr. P. Kalyanan (alias Babu) joined this DMDSC family in the year 1993. He started his career in this institution as a House Keeping Assistant and rose to the position of **House Keeping Supervisor**. He is meticulous in executing his work. He understands his responsibility and performs his work in a commendable manner. Babu's influence and dedicated hard work has radically improved cleanliness and environmental standards within the organization. His whole-hearted effort and sincerity are admired. His long service and loyalty to the institution is praiseworthy.

DIABETES WORD SEARCH

Key :



Z	E	J	M	A	N	A	G	E	M	E	N	T	X
H	R	E	B	Q	T	B	X	W	N	E	N	Y	P
Y	O	F	B	L	O	O	D	S	U	G	A	R	O
E	Y	P	B	O	E	H	B	V	P	G	Y	V	S
N	C	A	R	B	O	H	Y	D	R	A	T	E	S
I	O	E	X	E	R	C	I	S	E	M	B	S	F
N	E	D	Z	F	A	A	D	L	D	H	E	I	N
S	P	K	I	Z	X	I	F	I	W	R	Y	O	M
U	Y	Q	E	A	F	H	I	Z	P	C	O	L	W
L	T	D	I	A	B	E	T	E	S	L	T	T	X
I	Y	H	E	I	E	E	O	C	D	E	O	R	L
N	G	K	Z	J	H	O	T	H	O	T	Q	X	K



Vegetable Flakes



Ingredients:

Rice flakes	- 50g
Beans	- 10g
Carrot	- 10g
Tomato	- 20g
Coriander Leaves	- a few
Oil	- 2 tsp
Mustard seed	- a few
Peas	- 10g
Capsicum	- 10g
Onion	- 20g
Green Chillies	- 2 nos
Curry leaves	- a few
Turmeric	- a pinch
Salt to taste	

Method:

Cut beans, capsicum, carrot, onion and tomatoes into small pieces. Wash rice flakes and keep aside. Heat oil in a pan and add

mustard seeds, onion, curry leaves, green chillies and saute till it becomes golden brown. Add all the vegetables, peas, turmeric powder, salt and saute well. Add water and boil the vegetables. Mix the rice flakes with the boiled vegetables and saute for a minute. Garnish with coriander leaves and tomato. Serve hot.

Nutritive Value/Serving:

Energy	- 148 Kcal
Carbohydrate	- 2.4 g
Protein	- 2.2 g
Fat	- 5.3 g
Portion size	- 1 bowl
No. of serving	- 2



Revathy
Dietitian, DMDSC



Dr. Mohan's[®]
DIABETES SPECIALITIES CENTRE

WHO Collaborating Centre for Non-communicable Diseases Prevention & Control

If undelivered, please return to:

Dr. Mohan's Diabetes Specialities Centre,
6B, Conran Smith Road, Gopalapuram,
Chennai - 600 086, India
Tel No: (91-44) 43968888, 28359048, 28359051
Fax : (91-44) 28350935

To

Dear Readers, we invite your contributions to 'Diabetes Monitor' in the form of Diabetes related queries, anecdotes or personal experiences. Please send / email:

Dr. R. Pradeepa M.Sc., Ph.D.,
Editor, Diabetes Monitor
Email : pradeepa@drmohans.com

