CARdiovascular Disease &
Type 2 Diabetes Mellitus

Plant Sterols & Plant Stanols

Be a Heart-Smart Shopper

The Importance of Self-Monitoring of Blood Glucose
Penting Nyaw Pemantauan Sendiri Glukosa Darah

DSS Flag Day: 2 April 2016
DSS Annual General Meeting: 23 April 2016
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A WORD FROM THE VICE-PRESIDENT

BE HEART STRONG

It is my pleasure to write the message for this issue of Diabetes Singapore. As we close the first quarter of 2016, let us continue to strive towards better and healthier living!

The issue this quarter is looking at the heart and diabetes. Heart disease is amongst the commonest cause of death in people with diabetes in Singapore. Therefore it is important to look after your heart well. It is never too early to start, simple things like exercise and a better diet can really help to being ‘heart strong’. In this issue of Diabetes Singapore, we hope to share with you simple and effective tips on how to become more heart healthy. Remember that it is not simply enough to know that you heart is in good shape, the real challenge is to never rest on your laurels but to always strive continually to stay healthy.

In Singapore, we often forget how fortunate we are to have access to healthcare. On a recent trip to Dhaka, Bangladesh, a few weeks back, I was touched by the people and their passion for diabetes. Despite a lack of healthcare facilities and up-to-date equipment such as glucose strips to help them monitor their blood sugars, there were many people who had diabetes who were keen on learning and adopting better and healthier lifestyles.

In Singapore, where there is greater access to clean and healthy food, we should try and work hard and support one another towards better care of diabetes. A better diet, an active lifestyle and regular monitoring of glucose, blood pressure and cholesterol are keys to successful living with diabetes.

We have many exciting DSS activities lined up over the next few months, so please feel free to look over the many articles in this magazine and do check out our website in www.diabetes.org.sg for more information.

Best wishes and I look forward to seeing you all in one of our future DSS activities.

DR BEN NG
Vice-President
Diabetic Society of Singapore

Diabetic Society of Singapore (DSS) was founded by Dr Frederick Tan Bock Yam on 25 September 1971 to help diabetes patients manage their condition.

DSS is a non-profit organisation affiliated to the International Diabetes Federation and the National Council of Social Service. DSS gratefully accepts donations of any amount to help fight diabetes. All donations are tax-deductible. Please make cash donations in person at any of our centres. Cheque donations should be made payable to ‘Diabetic Society of Singapore’. You may also make online donations via www.sggives.org/diabetes.
DSS Support Group Meet & Share

Join us for our next support group event today! Call Juliana at 9278 2084 for more details or to register.

DSG CALENDAR 2016

30 April 2016
DSG Walk – Coney Island
Venue: Coney Island
Time: 4pm
Meeting Place: Punggol MRT Station
Passenger Service Area, Bus No. 84
Dinner: Kovan MRT Food Centre

28 May 2016
DSG Walk – Sentosa
Venue: Sentosa Walk
Time: 4pm
Meeting Place: Harbourfront MRT Station
Passenger Service Area
Dinner: Vivo City Food Centre/Republic Food Court

25 June 2016
DSG Walk – East Coast Park
Venue: East Coast Park
Time: 4pm
Meeting Place: Bedok MRT Station
Passenger Service Area, Shuttle Bus to Parkway Parade
Dinner: Marine Parade Food Centre or Parkway Parade Food Centre

1. Program subject to change due to weather conditions or unforeseen circumstances. Please look out for email updates.
2. Please wear good walking shoes.
3. Check your feet for cuts/wounds, and alert event coordinators if you have any. Please do not proceed with the activity if you have cuts or wounds on your feet.
4. Let’s cultivate great exercise habits! Bring along your own blood glucose metre!
5. Please bring along: umbrella, plain water as well as snacks (e.g. biscuits, in case of hypoglycaemia).
6. Meals will be at your own expense, unless stated otherwise.

Flag Day 2016

The Diabetic Society of Singapore Flag 2016 will be on Saturday, 2 April 2016. Students and volunteers will be doing house to house and street collections from 9.00am to 4.30pm.

Please donate generously to enable us to continue with our mission to provide awareness, diabetes education and counselling to those with diabetes, their family members and the public. Through knowledge and discipline, the person with diabetes becomes better equipped to achieve a healthy and productive life.

For the latest on DSS events, check out www.diabetes.org.sg or call 6842 6019

45th Annual General Meeting
Saturday, 23 April 2016
Drama Centre Level 3
Function Room 2
100 Victoria Street
National Library Building
Singapore 188064

LO HEI WITH DSS FOUNDER DR FREDERICK TAN

In celebration of Chinese New Year, DSS held a get-together on Saturday, 20 February 2016, with a very special guest, DSS Founder Dr Frederick Tan Bock Yam! Thank you, Dr Tan, for your kind presence and continual support!

Management committee members and staff bonded over afternoon tea and ‘Lo-Hei’ at Tiffany’s Café.

Past Outreach Programs

Tampines East WEC and MAEC Health Day held on 20 March 2016
Diabetes Self-Care Management Sharing Program for Nurses in Community Nursing Homes

The Neighbor of Choice (NOC) community program, a signature program by MSD Pharma Singapore Pte Ltd, supports the work of local non-profit organisations that strive to improve the quality of life of the residents in communities where they have a presence.

DSS is honoured to be awarded the grant to continue providing diabetes awareness, education and counselling to people with diabetes, their family members and the public. MSD’s support enabled DSS to implement program such as the Diabetes Self Care Management Sharing Program for nursing home nurses currently in progress. Response has been overwhelming with 10 nursing homes registering 120 of their nurses for the sessions from January to June this year.

Facilitated by a senior nurse consultant and assisted by invited speakers, the program brought the nurses through two full days of comprehensive diabetes self-care management. With this sharing, DSS aims to help complement patient care and equip the nurses with the knowledge to achieve optimal care in managing people with diabetes in their respective nursing homes.

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Contact DSS For More Info Today!!!
The Importance of Self-Monitoring of Blood Glucose (SMBG)

Many diabetes patients are not monitoring their blood glucose. When asked by their doctors and health care providers, the excuses given were:

1. Cannot afford a glucometer.
2. Afraid of pain.
3. Feel it is too troublesome.
4. Shy and ashamed of letting people know they have diabetes.

Why the need to monitor?

It is to enable their doctor to analyse their diabetic condition and use it as a tool to understand the effects of diet, exercise and medications on day-to-day glycaemic control. The doctors and healthcare providers can help to advise those with diabetes on the many types and brands of user-friendly glucometers that are within one’s budget. Proper techniques of SMBG can be taught to help understand the importance of testing accuracy in providing real-time measurement to guide personal diabetes management. Moreover, SMBG helps them in their diet control, when they are sick, when there are medication changes and to raise awareness during impaired hypoglycaemia and pregnancy.

Penting nya Pemantauan Sendiri Glukosa Darah

Ramai pesakit kencing manis yang tidak memantau glukosa darah mereka.
Apabila ditanya oleh doktor mereka dan penyedia penjagaan kesihatan, alasan yang diberikan ialah:

1. Tidak mampu membeli glucometer.
2. Takut sakit.
3. Rasa ia terlalu menyusahkan.
4. Malu dan segan jika orang tahu bahawa mereka mengidap kencing manis.

Mengapa perlu untuk memantau?

Ia adalah untuk membolehkan doktor mereka untuk menganalisa keadaan kencing manis mereka dan menggunakankannya sebagai alat untuk memahami kesan pemakanan, senaman dan ubat-ubatan pada kawalan glisemik hari ke hari. Para doktor dan penyedia perkhidmatan kesihatan boleh memberitahu mereka bahawa terdapat banyak jenis dan jenama glucometers mesra pengguna dalam pasaran yang berharga berpatutan untuk memenuhi bajet individu. Teknik yang betul pemantauan boleh diajar kepada mereka untuk membuat mereka memahami pentingnya ketepatan ujian dalam menyediakan pengukuran nyata untuk membimbing pengurusan kencing manis peribadi. Pemantauan sendiri glukosa darah (SMBG) juga membantu mereka dalam kawalan diet mereka, apabila mereka sakit, apabila terdapat perubahan ubat-ubatan dan juga untuk memberi kesedaran dalam hipoglisemia terjejas dan kehamilan.

Translation by Rodiah Hashim
Listen to your Heart

Henry Lew, Psychologist

Self-management of diabetes requires some level of ability to manage our emotions. Every now and then, each of us goes through an emotional rollercoaster ride of sorts that may derail us from our diabetes management.

Experiencing negative emotions contributes to poorer adherence to medications and less blood glucose monitoring*. We need to manage our feelings, so that we can also focus our thoughts and behaviours on healthy lifestyle habits.

Emotions “Management”

Fortunately, there are ways where we can manage our emotions better even when they run wild. Most of us tend to think that managing emotions means “getting a hold on it”. Translated into action, this would probably mean suppressing our emotions. For example, trying to “be positive” or “think positive”, or ignoring our emotions, or distracting ourselves with tasks in the hope that the emotion will “go away”.

“Getting a hold of our emotions” may or may not work. Remember those times when you tried to occupy yourself with “other things” and the emotions just kept coming back? Well, that’s really because there are other more effective ways to manage our emotions which you could try.
Benefits of Emotional Awareness

Surprisingly, one of the other ways of managing our emotions is simply being aware of and understanding what we feel. Research has indicated that a greater awareness and understanding of our emotions contributes to better management of negative emotions, self-management of diabetes and HbA1c outcomes.**

In addition, learning how to be more aware of our emotions actually helps individuals to experience significant reductions in negative emotions such as anxiety, depression, anger and distress. Individuals also report decrease in sleeplessness and fatigue, while experiencing a better quality of life. The frequency that an individual practises being aware of his emotions was associated with better self management of diabetes and reductions in HbA1c as well.

Importance of Emotional Awareness

So, why is it important to pay attention to our emotions? When we experience pain in our body, it is trying to tell us that there is possibly injury in that area or we could have strained that part too much due to our activities, etc. Similarly, when we “react”, and feel emotions, they are trying to tell us something. And knowing what each emotion is trying to tell us helps us to direct our behaviours rather than let our emotions direct us.

To illustrate, when we experience anger, we know that we need to cool off. We may also know what or who is making us angry. But to add on to our bag of tools to effectively manage our anger, it may be helpful to acknowledge that the anger is possibly trying to tell us that our rights, beliefs and/or needs may have been violated. The surge of anger could possibly help us to have the drive to stand up for our rights.

Recognising this, we can try to regulate our anger by cooling off or engaging in another activity that we normally do to manage our anger. Then when it reaches a certain level we may make use of that drive from anger to negotiate with someone, instead of screaming and shouting.

References:

Being More Aware of Our Emotions

So, how does one gain more awareness of emotions?

Awareness of our emotions means not just knowing what we feel, but also accepting our emotions and understanding what they are about. Here is what you can do to listen to your feelings:

1. Notice the feelings when they happen.
2. Stay with the feelings.
3. Describe the feelings in how you experience it in your body (e.g., tightness in the chest, lump in your throat, head spinning, feeling heavy all over, etc).
4. Label the feelings you experience with a ‘feeling’ word, e.g., hurt, sadness, heartbroken, depressed, etc.
5. Listen to the message of the feelings.

References:
“Singapore has the second-highest proportion of diabetics among developed nations”— so reads a headline of an article which appeared on the 2nd December 2015 edition of The Straits Times.

The finding is based on a news report by the International Diabetes Federation (IDF). It said 10.53% of people in Singapore aged between 20 and 79 are estimated to have the chronic disease, after correcting for age differences between the countries. Only the United States fared worse, with a percentage of 10.75. In fact, over the years, diabetes rates have risen from 8.6% of the adult population in 1992, to 11.3% in 2010. It was estimated that the rate would be 12.9% by 2015.

While it is good for Singapore to have the best airport, or the second most competitive economy in the world, to have the dubious honour of having the second highest proportion of diabetics among developed nations is not something we should be proud of. Rather, it is most alarming!
Why is diabetes of concern to practising cardiologists?

This is because there is a strong correlation between cardiovascular disease (CVD) and diabetes. While “cancer” has been touted as the number one cause of death in Singapore for years, the label is actually a mixed bag of worms, comprising all types of cancers. Pneumonia has also over taken Ischaemic Heart Diseases (IHD), as the second major cause of death in Singapore since 2012 (Table 1). However, if one looks as CVD, which includes IHD (patients with narrowing of heart arteries, and those with heart attacks), cerebrovascular diseases (stroke patients), hypertension and hypertension-related heart disease patients (Table 2), death by CVD is almost identical to cancer, and they each are responsible for about one in three deaths in Singapore from 2012 to 2014!

According to data published by the American Heart Association (AHA), adults with diabetes are two to four times more likely to have heart disease or stroke than those without. Among patients with diabetes mellitus, it is estimated that at least two-thirds of patients aged 65 or older die from some form of heart disease; and 16% die of stroke. Hence, while CVD may account for one-third of total deaths per year, it could account for almost 80% of deaths in adult diabetics.

What is new in CVD in type 2 diabetes?

I. Diabetes Mellitus being Coronary Heart Disease Equivalent.

In addition to being a risk factor for CVD, diabetic patients tend to have a greater burden of atherosclerosis (plaques which formed on the wall of arteries, causing narrowing), and also more atherogenic risk factors than non-diabetics. The latter include hypertension, obesity, increased total-to-HDL-cholesterol ratio, and hypertriglyceridemia.

While it is a known fact that patients with diabetes are associated with increased risk of CVD, the concept that patients with diabetes mellitus should be treated as Coronary Heart Disease (CHD) equivalent—i.e., patients already suffering from CHD actually was derived largely in part by the paper published by Haffner and colleagues in the New England Journal of Medicine in 1998.

Their study showed that over a seven-year follow-up period of 1059 subjects with type 2 diabetes and 1,378 patients without diabetes, those with diabetes, with or without a prior myocardial infarction (heart attack), had a greater mortality from CHD compared to the non-diabetic group. Death from CHD being 42

Table 1 Principal Causes of Death

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of Deaths</td>
<td>18,481</td>
<td>18,938</td>
<td>19,393</td>
</tr>
<tr>
<td>% of Total Deaths</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Cancer</td>
<td>30.1</td>
<td>30.5</td>
<td>29.4</td>
</tr>
<tr>
<td>2. Pneumonia</td>
<td>16.8</td>
<td>18.5</td>
<td>19.0</td>
</tr>
<tr>
<td>3. Ischaemic heart diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cerebrovascular diseases (including stroke)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. External causes of morbidity &amp; mortality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Hypertensive diseases (including hypertensive heart disease)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Urinary tract infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Nephritis, nephrotic syndrome &amp; nephrosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Other heart diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Chronic obstructive lung disease</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry Of Health Website (2016)
versus 16% for those with a prior heart attack, and 15 versus 2% for those without prior heart attack. Putting this in another way, the rate of the cardiovascular event risk in patients with diabetes but without previous heart attack (15%) is as high as the cardiovascular event risk in patients who have already suffered a heart attack but without diabetes (16%).

Both The National Cholesterol Education Program report from the United States and guidelines from Europe consider type 2 diabetes to be a CHD equivalent, and place patients with diabetes mellitus along with those who already developed CHD in the same “highest risk category”.

However, the concept of all diabetes as considered CHD risk equivalent may be overly simplistic, because not all patients with diabetes are at the same cardiovascular risk. In fact, following the original study by Haffner et al., multiple studies from different cohorts provided varying conclusions on the validity of the concept of coronary risk equivalency in patients with diabetes.

New guidelines have started to acknowledge the heterogeneity in risk among diabetic patients, especially those without other risk factors (they considered this group of patients to be at lower risk).

They further suggested an individualised approach to cardiovascular risk estimation and stratification in patients with diabetes, before applying the universal label “Coronary Heart Disease equivalent”, and the prescribed treatment associated with the label.

2. Which is the best test to screen for presence of CVD in asymptomatic adult diabetic patients?

Given the fact that two-thirds of deaths among patients with diabetes is related to CVD, and that symptomatic patients would have in one way or another declared that they have established heart diseases, detecting CVD in asymptomatic patients with diabetes is, hence, important.

There exists a myriad of tests to screen for CVD in asymptomatic diabetic adults. These include:

- Treadmill Exercise Test
- Carotid Intima-Media Thickness
- Coronary Calcium Score
- Computed Tomography Coronary Angiography
- Stress Radionuclide Cardiac Imaging
- Echocardiography (including stress combined echocardiography), and
- Cardiac Magnetic Resonance Imaging.

It is important to point out that each test has its strengths and weakness, and each assesses different aspects of the heart, and heart conditions.

Cardiologists will usually decide on the test to order based on history provided by patients (including previous tests carried out, if any), and physical examination, including baseline resting 12-lead Electrocardiogram (ECG) findings. It is important to point out that a normal resting ECG in no way rules out the presence of CHD in asymptomatic patients with diabetes. For patients with symptoms suggestive of angina, some form of exercise-related test, and at times invasive coronary angiography, would be the test of choice. For asymptomatic patients with diabetes, I favour Coronary Artery Calcium score assessment.
Coronary calcium score assessment is obtained by performing a Computed Tomographic (CT) scan study, without the use of contrast. The amount of radiation exposure is small, compared to a full CT coronary angiography study. X-ray pictures generated will show whether patients have specks of calcium deposited in their heart arteries. Normal heart arteries do not have calcium deposits in their wall, i.e., zero calcium score. Presence of calcium in heart arteries implies that they already have narrowing (or wall thickening—atherosclerotic plaques) in their heart arteries, hence, Coronary Artery Disease.

On Coronary Artery Calcium (CAC), studies have established that:

- The amount of CAC is closely associated with the amount and degree of heart artery narrowing. As a general rule, when one’s calcium score is >400, the chance that that particular patient has a >50% narrowing in the heart artery is high;
- Adult patients with type 2 diabetes harbour larger amounts of CAC than non-diabetic patients of a similar age;
- In general adult population, non-diabetic women tend to develop CHD a decade older, compared to men of the same age without diabetes. However, adult women and men with type 2 diabetes have been shown to have a similar extent of CAC deposits, indicating that diabetes negates the well-known advantage of women over men in developing CAD;
- CAC is better than some traditional risk scores (e.g. Framingham risk score and the United Kingdom Prospective Diabetes Study or UKPDS score) in predicting the occurrence of cardiovascular events;
- Sequential CAC imaging has shown that rapid progression of CAC identifies patients at higher risk for future CHD events; and
- 40% of adult diabetic patients have a CAC score <10 and a very low mortality rate. This again suggests that not all diabetes patients are of the same risk, or that they are all CHD equivalent.

Taking the above into consideration, the overall evidence would support the use of CAC scanning for detection, risk stratification and to perhaps to guide management in the asymptomatic adult diabetes patient.

3. Any new oral medication for type II adult diabetes which might offer better CV outcome?

In spite of the strong link between hyperglycaemia and CVD risk, the evidence that intensive glycaemic control reduces this risk is limited, compared with the well-proven risk reduction in microvascular and neuropathic complications.

In the United Kingdom Prospective Diabetes Study (UKPDS study), new type 2 diabetes patients managed with intensive therapy (sulphonylureas or insulin) were compared to those manage with conventional therapy (dietary intervention only). The intensively treated group achieved a lower HbA1c of 0.9%, compared to the conventional group.

Despite this, it only produced a significant 25% risk reduction for microvascular outcomes, but not for heart attack, stroke or death from any cause (all-cause mortality).

However, long term follow-up of the UKPDS cohort showed that some 10 years after the study ended, other than significant reductions in earlier noted microvascular complications, there is significant reduction in death from any causes, heart attack and diabetes-related end points despite subsequent similar mean HbA1c levels (8%) in both groups. This is known as glucose “Legacy Effect”—that early interventions for glucose control may lead in the long term to a benefit in CVD risk reductions.

It is possible that the legacy effect may also occur in other risk factors like hypertension and hyperlipidemia. Hence, despite the relative paucity of macrovascular outcome data, good glucose control in type 2 asymptomatic patients with diabetes is still important in terms of CVD prevention.

A relatively new oral diabetic medicine has been shown to provide good CV outcome results in a well conducted study (EMPA-REG OUTCOME trial). Empagliflozin (Jardiance) is an oral hypoglycaemic agent, and a highly selective sodium glucose cotransporter 2 (SGLT2) inhibitor. It reduces renal glucose reabsorption, increases urinary glucose excretion, and is associated with osmotic diuresis, reductions in body weight and blood pressure.

In adult patients with type 2 diabetes and high CV risk, Empagliflozin, on top of standard of care, was shown to reduce the primary composite outcome of CV death, non-fatal myocardial infarction or non-fatal stroke, as well as hospitalisation rates for heart failure and overall mortality compared with placebo. This is exciting as this new medicine is the only diabetes medication to show a significant reduction in both CV risk and CV death in a dedicated outcome study.

Summary

Increased cardiovascular morbidity and mortality in adult patients with type 2 diabetes is well established. Diabetes is associated with at least a two-fold increased risk of coronary heart disease; and approximately two-thirds of deaths among persons with diabetes are related to cardiovascular disease. However, recent advances in medicine enables us to detect CVD earlier in asymptomatic adults with type 2 diabetes, and offer more accurate risk assessment and stratification in them. In addition, a new oral diabetes mellitus drug has also been shown to improve CV outcomes. Future advances in the coming years will allow us to make greater strides in lowering clinical CVD in this high-risk patient population.
1. In a mixing bowl, combine curry powder, ground coriander, chilli powder, onion, salt and garlic. Rub into chicken breasts to season thoroughly and leave to marinate for 2 hours.

2. Preheat oven to 180°C (350°F).

3. Place chicken breasts on a lined baking tray and bake for 5 minutes, then reduce temperature to 160°C (325°F) and bake for another 12 minutes, or until juices run clear when thickest part of chicken is pierced with a fork. Remove from heat and leave aside to cool. When cooled, diagonally slice into 1-cm (½-inch) thick slices and set aside.

4. Prepare pita bread. In a large mixing bowl, combine flour and salt. Add yeast, milk, olive oil, chilli flakes and curry powder and knead until a soft dough is formed. Leave dough to proof at room temperature for 30 minutes.

5. Preheat oven to 200°C (400°F).

6. Divide dough into 7 equal portions. Leave to proof for another 10 minutes, then roll out to 0.5-cm (1/4-inch) thickness. Place on a baking tray and bake for 10–12 minutes, or until golden brown. Remove from heat and set aside to cool. Slice off one edge of each pita to make a pocket. Stuff with lettuce, chicken, tomato and cucumber slices. Serve warm.

**METHOD OF PREPARATION**

**INGREDIENTS**

- **Curry Pita Bread**
  - Bread flour 220g (8 oz)
  - Salt 1 tsp
  - Instant yeast 1 ½ tsp
  - Low-fat milk 160 ml (5 1/2 fl oz / 3/5 cup)
  - Olive oil 2 tsp
  - Chilli flakes 3 tsp
  - Curry powder 2 tsp

- **Curry Pita Bread**
  - Curry powder 2 Tbsp
  - Ground coriander 1 tsp
  - Chilli powder 1 tsp
  - Onion ½, peeled and finely chopped
  - Salt a pinch
  - Garlic 2 cloves, peeled and finely chopped
  - Chicken breasts 250g (8 3/4 oz), skinned
  - Butterhead lettuce 7 leaves
  - Tomatoes 2, medium, thinly sliced
  - Cucumber ½, thinly sliced Curry pita bread

**NUTRITION INFORMATION** per serving

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>193 kcal</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>28.4g</td>
</tr>
<tr>
<td>Fat</td>
<td>3.8g</td>
</tr>
<tr>
<td>Dietary Fibre</td>
<td>2g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>19.2mg</td>
</tr>
</tbody>
</table>
Berry Yoghurt Surprise
serves 4

Magdalin Cheong & Daniel Yeo
Dietetic and Food Services
Changi General Hospital

Yoghurt is a good source of calcium. Enjoy this refreshing dessert at any time of the day!

For the yoghurt topping, strawberries may be substituted with 55g (2 oz) strawberries and 30g (1 oz) strawberry purée.

INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity/Description</th>
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<tbody>
<tr>
<td>Strawberry low-fat yoghurt</td>
<td>200g (7 oz)</td>
</tr>
<tr>
<td>Strawberries</td>
<td>4, medium, cleaned, hulled and sliced</td>
</tr>
<tr>
<td>Sugar-reduced soy milk</td>
<td>100 ml (31/3 fl oz)</td>
</tr>
<tr>
<td>Gelatine powder</td>
<td>1 tsp</td>
</tr>
<tr>
<td>Hot water</td>
<td>1 Tbsp</td>
</tr>
<tr>
<td><strong>Topping</strong></td>
<td></td>
</tr>
<tr>
<td>Strawberries</td>
<td>85g (3 oz), cleaned, hulled and sliced</td>
</tr>
<tr>
<td>Gelatine powder</td>
<td>½ tsp</td>
</tr>
<tr>
<td>Hot water</td>
<td>2 Tbsp</td>
</tr>
<tr>
<td>Basil seeds (selasi)</td>
<td>1/4 tsp, soaked until double in size and drained</td>
</tr>
</tbody>
</table>

NUTRITION INFORMATION per serving

- Energy: 58 kcal
- Carbohydrate: 9.2 g
- Fat: 1 g
- Dietary Fibre: 0.7 g
- Cholesterol: 3 mg

METHOD OF PREPARATION

1. In a mixing bowl, combine yoghurt, strawberries and soy milk. Mix well and set aside.
2. Mix gelatine with hot water until completely dissolved. Stir into yoghurt mixture, then pour into 4 serving glasses. Set aside to cool.
4. Mix gelatine powder with hot water and stir until completely dissolved.
5. Add basil seeds and blended strawberries and mix well. Spoon on top of yoghurt mixture and refrigerate for 1 hour, or until topping has set.
6. Garnish as desired and serve chilled.

Mini Avocado Toast with Egg

serves 4

Kohila Govindaraju
Nutritionist
The Berries Nutrition Counselling

**METHOD OF PREPARATION**

1. Boil quail eggs for 2 minutes. Place the eggs in cold water to chill. Peel.
2. Combine mashed avocado, olive oil, pepper and lime juice into a bowl.
3. Cut ciabatta bread into 6 pieces
4. Spread avocado mix onto the bread.
5. Place a sliced quail egg on top.

**INGREDIENTS**

- Ciabatta: 1
- Quail eggs: 3, boiled
- Avocado: 100g, mashed
- Lemon juice: 1 tsp
- Olive oil: 1 tsp
- Pepper: ½ tsp

**NUTRITION INFORMATION** per serving

- Energy: 63 kcal
- Protein: 1.8g
- Carbohydrate: 6g
- Total Fat: 3.5g
  - Saturated fat: 0.7g
  - Trans fat: 0g
- Cholesterol: 38 mg
- Dietary fibre: 1 g
- Sodium: 54 mg
- Carbohydrate exchange: 0.5 exchange

Kohila is the author of *How to Lose Weight Without Hunger* published by PatientsEngage.

[www.patientsengage.com](http://www.patientsengage.com)
High serum LDL cholesterol (LDL-C) is a risk factor for coronary heart disease. The good news is that some of the foods that you eat can actually reduce LDL-C.

Certain foods such as wheat germ, almonds, broccoli and berries contain plant sterols and plant stanols. These sterols and stanols possess some structural similarities to cholesterol which help to reduce the body’s cholesterol absorption in the digestive tract. This can lead to decreased serum LDL-C concentrations.

Research suggests that taking 2 grams of plant sterols and stanols per day can reduce about 10% LDL-C on average. Taking more than 3 grams per day does not seem to have any additional cholesterol lowering benefit.

As plant sterols and plant stanols are found in small amounts naturally in foods, it is challenging to achieve 2 grams per day from natural foods alone. Therefore, some food manufacturers have added them into foods such as margarine and milk in the form of plant stanol esters. Plant sterols and stanols have also been marketed in supplements. However, be cautious when just starting them, as large doses have been associated at times with gastrointestinal symptoms such as nausea and diarrhea.

Plant sterols and stanols should not be used to replace cholesterol-lowering medications. Do let your healthcare provider know if you are taking them.

Although plant sterols may help with lowering LDL-C, do not forget the basics: Reduce intake of saturated and trans fat, increase soluble fibre intake, exercise and maintain a healthy weight!

References:

Table 1: Plant sterols found in some vegetables, fruits and berries

<table>
<thead>
<tr>
<th>Food</th>
<th>Total plant sterols per 100g fresh weight of food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat bran</td>
<td>0.200g</td>
</tr>
<tr>
<td>Almond</td>
<td>0.138g</td>
</tr>
<tr>
<td>Rolled oats</td>
<td>0.039g</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>0.037g</td>
</tr>
<tr>
<td>Broccoli</td>
<td>0.037g</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>0.031g</td>
</tr>
<tr>
<td>Raspberry</td>
<td>0.027g</td>
</tr>
<tr>
<td>Blueberry</td>
<td>0.026g</td>
</tr>
<tr>
<td>Orange</td>
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</tr>
<tr>
<td>Red Capsicum</td>
<td>0.022g</td>
</tr>
<tr>
<td>Grape</td>
<td>0.020g</td>
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<tr>
<td>Apple</td>
<td>0.018g</td>
</tr>
<tr>
<td>Kiwi</td>
<td>0.018g</td>
</tr>
<tr>
<td>Plum</td>
<td>0.013g</td>
</tr>
<tr>
<td>Chinese Cabbage</td>
<td>0.013g</td>
</tr>
<tr>
<td>Banana</td>
<td>0.012g</td>
</tr>
<tr>
<td>Strawberry</td>
<td>0.010g</td>
</tr>
<tr>
<td>Onion</td>
<td>0.009g</td>
</tr>
<tr>
<td>Orange juice</td>
<td>0.009g</td>
</tr>
<tr>
<td>Lettuce</td>
<td>0.009g</td>
</tr>
<tr>
<td>Cucumber</td>
<td>0.008g</td>
</tr>
<tr>
<td>Tomato</td>
<td>0.007g</td>
</tr>
<tr>
<td>Potato</td>
<td>0.005g</td>
</tr>
</tbody>
</table>

THE LIGHTER SIDE

Kohila Govindaraju
Nutritionist
The Berries Nutrition Consulting

BE A HEART-SMART SHOPPER

It is always easier to stick to a healthier diet if you prepare your own meals at home. At the supermarket, the range of food choices these days is quite incredible. You may sometimes get so attracted to the food packaging that you inadvertently pile on the calories to your cart.

Let us go on a heart-smart trip to the supermarket, starting with the most colourful section—the fruit section.

FRUITS & VEGETABLES

The key word here is VARIETY.

Buy more vegetables which are rich in fibre such as string beans, French beans, peas, celery, carrots, okra (ladies finger), broccoli, jicama, radish, spinach, beet leaves, Swiss chards, cucumber, Brussels sprouts, cabbage, asparagus, eggplant and fruits such as banana, pear, apple, strawberries, blueberries, kiwi, figs, guava, oranges, and plums.

If choosing frozen or canned vegetables, go for fruit in juice, without added sugar, and less sodium.

The supermarket shelves are always stocked with different types of milk such as low-fat, high calcium, fat-free, homogenised, unpasteurised fresh and whole milk. Finding out what kind of milk is the healthiest and the best to buy is a real challenge. The best milk choices in the dairy aisle are fat-free, low-fat or skim milk. Dairy products are good sources of calcium and vitamin D. Avoid flavoured milks such as chocolate, strawberry and banana which are loaded with sugar and, therefore, high in calories.

Cheese has nutritional merit, especially calcium, the bone mineral. But it is easy to overdo it when preparing pizza, nachos and salad. Cheese is high in calories, fat and sodium. Reduced-fat cheeses have at least 25% less fat when compared to whole-milk cheeses. Go for fat-free, low-fat, reduced-fat and low sodium (no more than 140mg per serving) cheeses. The harder the cheese, the higher the fat!

Reach for non-fat or low-fat yoghurts rich in live and active cultures. Fruit-flavoured yoghurt is packed with more sugar and calories. Whey the fluid sometimes separates from yoghurt contains calcium, phosphorus, and zinc. Mix it back with yoghurt and enjoy!

Limit your consumption of eggs to three a week. Limit the consumption of hard margarine, butter, cream and ice creams.
MEAT & PROTEIN

Meat is a valuable source of protein and iron. It is easy to purchase the right meat when you know what to look for. Reading the label will make you understand the right quality of the meat. Choose red meat and pork with label loin or round, for they are usually low in fat.

Choose the leaner light meat like chicken breasts than thighs and legs. Remove skin before cooking. Purchase more meat substitutes such as dried beans, peas, lentils and soybean curd.

Include nuts and seeds in your diet as they are good sources of protein and polyunsaturated fats. Sprinkle nuts and seeds over cereal or salads and enjoy the tasty crunch!

FISH

Fish is among the healthiest foods for a healthy heart. Fish contains high-quality protein, iodine and vitamin D.

Enjoy two to three servings of fish per week, such as salmon, tuna, herring, grouper, yellowfin grouper, pomfret, sardines, mackerel, and seabass.

Tuna, salmon, herring are good sources of heart healthy omega fatty acids. Steam or grill your fish instead of frying.

While purchasing bread look for whole grain, high fibrous. Oats, buckwheat or rye bread are great for breakfast. Limit the purchase of doughnuts, pies, cakes and cookies. Most of these baked goods are made with egg yolks, saturated fats, trans-fat and high sugar. Read the food labels before adding to your cart. Choose raisin or oats bread instead of muffins. If going for bakery goods watch out for the saturated and partially hydrogenated fats hidden in casseroles, and desserts.

Pick up oils rich in un-saturated fats such as corn oil, olive oil, safflower oil, sesame oil, soybean oil, and sunflower oil. Just say no to palm oil, coconut oil, and cocoa butter. They are high in saturated fats. Make your own marinades and dressings with light oil and spices.
Cardiovascular Fitness & Diabetes

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Cardiovascular fitness refers to the ability of our heart, lungs, blood cells, and muscles, working together to transfer and absorb oxygen and nutrients, and expel carbon dioxide and other debris for efficient energy production through a process called energy metabolism. Energy production requires fuels such as carbohydrates and fats. When oxygen is insufficient, we can only produce energy from carbohydrates that lasted a short duration. When oxygen is abundant, we can metabolise both carbohydrate and fat to produce energy that last longer duration. In another words, to improve our body’s utilisation of fuel to fight diabetes and maintain a healthy body composition, training both aerobic and anaerobic components of our cardiovascular fitness is needed.

Aerobic exercises are prolonged exercises that are less intense. Physiologically, this mode of exercise expends more fat than carbohydrate. The acute effect of this mode of exercise is reducing blood sugar gradually. The chronic effect of this exercise is improved HbA1c, improved blood pressure, and increased tissue oxygen supply during exercise (improved endurance). Other effects of chronic aerobic exercise include improving lipid profile, body composition and mood. Some examples of such activities are walking, dancing, jogging, cycling and swimming. The current guideline is to achieve 30 minutes of such activities at least five times a week in moderate intensity to maintain health. To fight diseases such as obesity and diabetes, we recommend 60 minutes. The most accurate way to determine intensity is by measuring heart rate.

However, it is not always convenient to check our heart rate while exercising unless we wear a heart rate monitor. A more general and convenient way to make sure we exercise in moderate zone is the ability to complete 3.2km in 30 minutes. If we are not able to complete 3.2km in 30 minutes in one go, we can accumulate the 30 or 60 minutes of moderate exercise over an interval bout of 10 minutes or throughout the day. We can further create two-minute intervals within the 10 minutes bout if we are not able to complete 10 minutes in one go.

Here is a summary of the workout plan. Work towards 60 minutes gradually when you feel more confident and easy. Usually, it will take about two weeks before you start to see some improvements.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Repetitions per Session</th>
<th>Sessions per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-min bout 5 times with 2-4 mins rest</td>
<td>3-6</td>
</tr>
<tr>
<td>2</td>
<td>10-min bout 1-6 times with 5 mins rest</td>
<td>6-1</td>
</tr>
<tr>
<td>3</td>
<td>20-min bout 1-2 times with 5 mins rest</td>
<td>2-1</td>
</tr>
<tr>
<td>4</td>
<td>30-min bout</td>
<td>1-2</td>
</tr>
</tbody>
</table>

Target a total of about 150-300 minutes per week of exercises in aerobic mode.
Anaerobic exercises are exercises that are short and intense. The shorter the bout of workout, the more intense it should be to be effective. Physiologically, the tissue demand of oxygen exceeds the amount of oxygen our body can supply. To continue exercising, our body has to depend on carbohydrate for anaerobic metabolism to produce energy. This mode of exercise expends mainly carbohydrates and does not last long. It lowers blood sugar quickly. The acute effect of this mode of exercise is that it reduces blood sugar quickly. There is also a high chance of blood sugar rebounding or going up due to the recycling of pyruvic acid (a by-product of anaerobic metabolism) back to carbohydrates for energy production. However, the rise is temporary and blood sugar will return to normal shortly after exercise.

The chronic effect of anaerobic exercise is improved blood sugar sensitivity, metabolic rate, muscular strength and endurance. It further improves HbA1c when combined with aerobic exercises. Some examples of this exercise mode are weight training with short rest, running, sprinting, bicycle sprinting, and brisk climbing of stairs. The most common form of anaerobic training program is the High Intensity Interval Training (HIIT). Current guidelines encourage 20 minutes of HIIT at least two times per week. Below is a summary of the workout plan. Work towards 60 minutes gradually when you feel more confident and easy. Usually, it takes about two weeks to feel stronger but takes about six to eight weeks to actually see effects.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Type &amp; Repetitions per Session</th>
<th>Sessions per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Weight training</strong>&lt;br&gt;Progress from 4 to 8 exercises, 10 repetitions, 3 sets with 1-2 minute rest between sets. Select weights that you can only do 12-14 repetitions or about 65% of your maximum strength.</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td><strong>Sprinting, stationary bike, cross trainer, rower machine</strong>&lt;br&gt;30 seconds all out, 30 seconds active rest (very slow) x 10 repetitions (10 minutes) x 1-2 sets</td>
<td>2-4</td>
</tr>
<tr>
<td>3</td>
<td><strong>Treadmill</strong>&lt;br&gt;Incline 6 -10%, brisk walk at &gt;5km/h 2 min walk, 1 min rest (stop or at very slow speed) x 1 set</td>
<td>2</td>
</tr>
</tbody>
</table>

For weight exercises, select exercises that engage large muscle groups, preferably multi-joints.

Always start an exercise regime at a slower pace, shorter duration and lower intensity. As fitness improves, progress gradually. Remember to do proper warm-ups, cool-down and recovery exercises such as stretching before and after each session to prevent injury.
The ‘Swollen’ Disc: Optic Disc Edema

Most retinal photographs with blurred disc margins are often from pseudopapilledema. Commonly, the small optic disc seen especially in hyperopia appear congested and ‘swollen’. A high index of suspicion is needed to reduce the chances of missing a ‘real’ papilledema (bilateral optic disc edema) or the unilateral optic disc edema. Papilledema points to raised intracranial pressure from a variety of causes such as intracranial tumour, intracranial haemorrhage, pseudotumour, and from drugs such as corticosteroids, tetracycline and others.

The optic disc with optic disc edema may show some of the following signs:
1. Blurred optic disc margin
2. Hyperaemic disc
3. Congestion of the veins from the optic disc
4. Haemorrhages around the disc (peripapillary haemorrhage)
5. Exudations around the optic disc
6. Loss of the optic cup
7. Retinal folds

Diagnosis of raised intracranial pressure from the appearance of the optic discs alone is difficult in the early or resolving stages. The optic discs may look fairly normal and the visual acuity is often normal as well.

It cannot be emphasised often enough that the retinal photograph is but a clinical tool to sieve out the majority of normal looking photographs from ‘abnormal’ photographs. Findings have to be correlated with clinical signs and symptoms.

Recent real life situation #1
Miss B, a 45-year-old housewife saw me in my clinic for mild blurred vision. Visual acuity was 6/6 in both eyes. The retinal photographs look unremarkable. She had a ‘migraine’ history for several years. She mentioned in passing about missing certain letters while typing. A quick visual field confrontation test showed a left homonymous hemianopia. A MRI the same evening showed a large occipital lobe meningioma with cerebral edema and midline shift.

Learning Point
Miss B, despite the raised intracranial pressure and a large compressive brain tumour had no discernible signs of papilledema or visual acuity defect. The diagnosis would have been missed with dire consequences had the confrontational visual field and subsequent MRI not been done. She had surgery to remove the brain tumour the following day and recovered well.

Recent real life situation #2
Miss M is 19 years of age and had very frequent and persistent headaches for a few years. Vision is 6/6 in both eyes. Retinal examination showed blurred optic disc margins in both eyes. The left retina also had increased tortuosity of the blood vessels and sphincter shaped haemorrhages, signs consistent with papilledema. She had no other neurological signs. MRI was necessary to exclude a potential brain tumour. It was negative. Causes of optic disc edema apart from raised intracranial pressure from space occupying lesions include optic neuritis and ischemic optic neuropathy.

Learning Point
In Miss M situation, the papilledema is likely to be from benign intracranial hypertension, a diagnosis of exclusion. The history of headaches and swollen optic nerves justified a MRI. Fortuitously it turned out to be not from a brain tumour or other space occupying lesions.

The stories of these two patients underscore the need to be acutely aware of the different possible presentations and diagnoses despite seemingly certain clinical signs. The bilateral swollen discs scenario is not always due to a brain tumour and neither is the apparently ‘normal looking’ optic discs always normal. Caregivers beware!