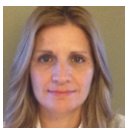
CASE STUDY: METABOLIC SYNDROME

In the first of our case studies written with students of Nutrition and Dietetics in mind, Lori Warford-Woolgar provides us with an example case of a 64-year-old male with Metabolic Syndrome.



Lori Warford-Woolgar
Registered Dietitian and Nutrition Research Consultant

Approximately one in five adult Canadians have metabolic syndrome.[1] A person with metabolic syndrome is twice as likely to die from heart attack or stroke and three times as likely to have a heart attack or stroke when compared to people who do not have metabolic syndrome.[2]

The International Diabetes Federation (IDF) defines metabolic syndrome as a condition in which a person has central obesity in addition to any two of the following factors: elevated triglycerides (TG), reduced high den-sity lipoprotein (HDL) cholesterol, elevated blood pressure and elevated fasting plasma glucose (FPG).[3] The IDF recommends that primary intervention for the management of metabolic syndrome includes moderate restriction of energy intake to obtain a 5.0-10% decrease in body weight in the first year, increased physical activity and dietary changes

Case study

RW is a 64-year-old male who works as a mine shaft hoist operator. He lives with his wife of 40 years who enjoys cooking and baking and packs his snacks/lunches for work. His job is sedentary and he typically works 12-hour days. RW is 5'9" (175cm) tall and weighs 222lbs (100.8kg). The lowest weight he has been in the last five years is 215lbs (97.6kg). Although he tries to run on his treadmill at home, exercise is sporadic and is not part of his usual routine. RW was recently diagnosed with impaired fasting glucose (IFG) with a fasting plasma glucose (FPG) of 6.8mmol/L and dyslipidemia with a reduced HDL of 0.75mmol/L. He was diagnosed with hypertension (132/72 treated) about five years ago and has had gastro-oesophageal reflux disease (GORD) for several years.

RW is a non-smoker. He has a younger brother who survived a heart attack and underwent bypass surgery. RW's current medications include Losaran 100mg OD to treat hypertension and Omeprazole 20mg BID to treat GORD.

RW's typical daily food intake:

Breakfast: coffee with skimmed milk powder, two fried eggs and bacon, two slices wholemeal toast with non-hydrogenated butter and small glass of orange juice
Snack: pudding cup (yoghurt/mousse) and apple
Lunch: deli sandwich on wholemeal bread with lettuce, tomato and mayonnaise, chocolate chip cookies and tea with skimmed milk powder
Snack: cheddar cheese, soda crackers and banana
Supper: meat, potatoes, side vegetable and gravy or margarine, 1.0% milk and tea with skimmed milk powder and a bowl of cup of ice cream

RW snacks before bed on processed cheese slices, ice cream, cookies and often has two evening drinks of rum and cola. RW admits he has a weakness for sweet foods. RW uses added salt at all meals.

Lori is a Registered Dietitian living in Canada. She has a Master's Degree in Human Nutritional Sciences and enjoys critiquing nutrition research and analysing how the latest evidence can be applied to dietetic practice.

Identification of nutritional need

1. Assessment

Medical diagnosis:
Metabolic syndrome (hypertension, dyslipidemia, IFG, obesity), GERD
Anthropometric measurements:
Height 5'9" (175cm); weight: 222lbs (100.8kg); BMI=32 indicating obesity; waist circumference 46" indicating very high risk for Type 2 diabetes, hypertension and cardiovascular disease.
Framingham Risk Score:
29.4% indicating high risk of cardiovascular event.
Dietary Intake Analysis:
Food frequency questionnaire revealed total energy intake is approximate 3,600 calories/day with 30% of calories from total fat, 12% of calories from saturated fat and 20% of calories from sugar. Sodium intake 4,800mg/day. Fibre intake 25g/day
Recommended body weight:
121lbs (55kg)-165lbs (75kg) based on BMI of 18-24.9. Client is 57lbs (25.9kg) over high end of ideal body weight range
Estimated energy needs:
2,200 calories/day based on ideal body weight of 165lbs using Harris-Benedict Equation with activity factor of 1.3. Client is consuming 1,400 calories/day more than estimated energy needs. To initiate gradual weight loss 3,100 calories/day is recommended (current energy intake of 3,600 calories/day - 500 calories/day).
Nutrition Related Laboratory Values:
FPG 6.8mmol/L, HDL 0.75mmol/L, blood pressure (treated) 132/72
Medications:
Losartan 100mg OD, Omeprazole 20mg BID
Readiness to change nutrition-related behaviours:
Client is in the preparation stage of change. He monitors his blood glucose daily and is worried that he might develop Type 2 diabetes and/or have a heart attack. Client states morning FPG is usually 10mmol/L and two hours after a meal can range from 6.0-12mmol/L, which are slightly higher values than recommended by the Canadian Diabetes Association (FPG 4-7mmol/L and two hours post prandial 5.0-10mmol/L).[4] Client is uncomfortable with his weight and is aware that he consumes too much sugary foods and requires more physical activity. Client admits that if he is aware there are sweets in the house it is difficult to resist the temptation of snacking on them in the evenings. Client is attempting to increase physical activity at home, but is finding it difficult to maintain a routine due to his long days at work.

2. Identification of nutrition and dietetic diagnosis

Excess energy intake related to high fat and high sugar/sugary food consumption.
Excess saturated fat intake due to fried foods, large meat portions, high fat snack foods and added fats.
Excess sodium consumption related to added salt and select processed foods.
Moderate fibre intake.
Decreased physical activity.

3. Plan nutrition and dietetic intervention

Nutrition prescription:
3,100 calories/day with 25% of calories from total fat, <7.0% of calories from saturated fat and 10% of calories from sugar. Limit sodium intake to 1,500-2,300mg/day. Increase fibre intake to 40g/day.
Motivational Interviewing:
Meet with client and his wife to discuss alternatives to evening sugary snacks, such as almonds and grapes with milk or homemade low sugar/high fibre muffin and cheddar cheese with tea. Recipes provided. Discussed limiting two drinks of rum and cola to one evening a week. Provided examples of healthier breakfast choices, such as porridge and banana with tea or boiled egg with wholemeal toast and glass of fresh orange juice. Discussed limiting the purchase of processed high fat and sugar foods. Suggested alternatives to salt in providing added flavour to foods and gave a list of how herbs and spices complement particular foods. Reviewed portion sizes using food models so client could relate to what a healthy portion looks like. Explored ways to incorporate moderate exercise while at work, such as going for walks during breaks.

4. Implement nutrition and dietetic intervention
Provided sample meal plan and discussed benefits of increased fibre intake and decreased, energy, fat, sugar and sodium intake. Plan to return to nutrition outpatient clinic in two weeks for continued lifestyle change intervention. Provided instruction on how to record three-day food intake record, which is to be completed three days prior to next follow-up appointment.
5. Monitor and review
On a bi-weekly basis, monitor and review weight at home, record blood glucose values and dietary intake with particular emphasis on the need for decreased intake of energy, fat, sugar and sodium with increased intake of fibre. Discuss physical activity and how to include on a regular basis. Recheck FPG, HgA1C, blood lipids and blood pressure in 3/12.
6. Evaluation
First two-week follow-up: Client has decreased weight by one pound. Three-day food record indicates daily caloric intake has decreased by 500 Calories/day to 3,100 calories/day with 28% of calories from total fat, 9.0% from saturated fat and 16% from sugar. Sodium intake has decreased to 3,000mg/day. Daily at-home recorded blood glucose values indicate FPG of 8.0mmol/L and two-hour post prandial of 8.0-10mmo/L. Client has been walking during breaks at work. Client has shown improvement in all areas of dietary intake and physical activity. Plan is continue two-week follow-up appointments to encourage lifestyle change.

References
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