



Fiona Wood Public Lecture Series

Transcript for 'The power of nutrition in health and recovery'

Presented by Senior Dietitian Emily Hunt and Accredited Practicing Dietitian/Senior Dietitian Louise Hesketh

We're talking about wellness tonight and health and wellbeing and how we can use nutrition to promote our health and wellbeing. So I've got here a bunch of celery and a packet of potato chips. Which one of these do you think is going to be best at promoting health and wellbeing? I know you're probably about to turn to the person next to you saying, 'Oh I know we shouldn't have come to hear the dietitian, she's just going to tell us to eat celery". I am going to say that celery is an excellent food, it's full of nutrients and it's full of fibre so it is a good thing for most people to eat. However, there are some people for whom celery is an unhealthy food choice.

I see a lot of people that have had colorectal surgery and if someone has had major bowel surgery their bowel while it's recovering and has some scar tissue and is swollen and sore, is quite narrow. So the high fibre that makes celery so healthy actually can be dangerous because the fibre can get caught in a narrow bowel and can cause some obstructions and a lot of problems.

On the other hand, potato chips can be quite healthy for someone who has had major bowel surgery. Someone who's had a lot of their bowel removed has difficulty absorbing salt so the high salt contents of the chips is excellent and the other thing is that people have poor absorption and get a lot of runny diarrhoea. The starchy content of the chips can help to thicken their bowel motions and make things a lot more regular for them. So for them celery is the unhealthy food choice and chips are the healthy food choice.

I know that is pretty confusing and so tonight I'm going to talk to you about how you can make the right decisions about your health. What's going to be a healthy food for you might be quite different from the person who is sitting next to you. So unfortunately tonight I don't have time to go through each one of you and tell you what you should be eating but I'd like to give you a framework for how to make decisions about nutrition information that you receive. To help me demonstrate this framework I'm going to use three examples of different diets and how to analyse whether those diets are going to be the right thing for the patients I'm talking about.

Overall I'm going to talk briefly about what becoming a dietitian involves and some of the factors that we need to take into account when considering nutrition recommendations. We'll look at what a healthy diet looks like for the majority of the population and the diets that I'll look at and they're probably some of the ones that you've mentioned. There's a Crohn's disease nutrition diet, there's the ketogenic diet and the 5:2 diet.

In terms of becoming a dietitian, dietitians need to do an undergraduate degree that takes three to four years. The majority of that degree needs to be in biochemistry and physiology and chemistry so it's quite a rigorous training programme.

Once you have done your undergraduate degree you need to apply to get into a Master of Nutrition and Dietetics or Master of Dietetics and once you're in the Master of Dietetics it takes another one and a half to two years to complete that training. So dietitians have got a lot of training about the nutrition. If you compare that to what kind of training doctors get, doctors do get a bit of training in nutrition but only a very small amount in comparison to dietitians. But the other thing is that at least doctors have a framework for analysing scientific information.

One of the voices that we hear a lot in social media is the influencers, social media influencers. A lot of the people who are very confident in giving dietary advice have absolutely no training at all. It's really important to be careful what you read about nutrition, particularly on social media and fortunately there are some changes that are being made. So for example Instagram now has an option for when you read dubious nutrition information on Instagram you can actually report that and they can remove some of the dubious content.

When I'm looking at what diets I need to recommend for my patients, I need to take into account what their medical conditions are and some people have quite complicated medical histories. I need to look at what their motivations are, what their level of motivation is, how much they are prepared to make changes. I need to look at their social factors, their financial background and what's achievable and affordable for them and what is going to maintain good quality of life for the patients. One of the key messages tonight is it's not a case of one size fits all when it comes to nutrition.

The closest we have to a one size fits all diet is the Australian Guide to Healthy Eating. This has been developed through a huge amount of research. It started with the researchers looking at what the recommended amounts of 10 key nutrients that people need. So they might be looking at nutrients like iron and calcium. Then they look at what foods people need to eat in order to get enough of those nutrients. So they found that if you're eating from the five food groups you can achieve the majority of those nutrition recommendations. So the five food groups you probably have learnt in school. Breads and cereals, vegetables, fruit, dairy products, meat and meat alternatives.

If you're eating from these five food groups and enough of the different five food groups you should be getting all of the vitamins and minerals that you need. A lot of diets that you might see out there actually cut out entire food groups. So if you're following a diet that is removing one of those five food groups, there is a very good chance that there is not going to be enough vitamins and minerals in that diet. If you want more information about that and specific serve sizes for your age or gender, that can be found at eatforhealth.gov.au.

The first diet I'm looking at is the Crohn's disease diet. So we have Cinderella. She is 28 years old. She has been diagnosed with Crohn's disease and she has been on medication but she's had a severe recurrence of her Crohn's disease. I will explain more about what Crohn's disease is in a minute. She has inflammation in her ileum which is at the bottom of the small intestine. She's lost 8 kg and she currently weighs 51 kg. She might actually need to have surgery to remove the inflamed part of her bowel.

Crohn's disease is an autoimmune condition and it causes inflammation of the digestive tract and this is a picture of what the Crohn's disease bowel looks like and it's sore and inflamed. Crohn's disease causes severe abdominal pain and discomfort and can cause diarrhoea and bleeding.

You might actually know someone who's got Crohn's disease or a similar condition called ulcerative colitis because they are actually quite common. Sometimes people with Crohn's disease will also get scarring in their bowel and this can cause narrowing of the intestine and blockages. The disease is thought to have a genetic component and someone I was speaking to recently who is a geneticist said that they think that the Crohn's disease genes are linked to neanderthal DNA, which I thought was quite interesting. I don't know if a neanderthal got Crohn's disease. It's not fully understood what triggers the disease though. So we know that genes are involved.

Some of the nutritional challenges with Crohn's disease include Crohn's disease include the fact that patients really don't feel like eating. So it's really hard to get enough nutritious and healthy healing food into people that have pain and nausea and discomfort whenever they eat. Often patients have lost a lot of weight and losing a lot of weight can mean that they have got less strength to fight the disease and just live their lives in general. Patients also have increased nutritional needs. They need more protein and nutrients to help heal the gut and often patients have had poor absorption of nutrients or some of the medications that they are on can cause interactions where they have increased nutrient needs as well. So we've got a patient group that doesn't want to eat but they need a lot of nutrients so it's really challenging.

There is a new hypothesis on what triggers Crohn's disease and there's not that much confidence that this is absolutely the case but there's increasing evidence for this hypothesis. This is all to do with the fact that there's so much more research being done on the gut microbiome. The hypothesis is that bacteria will stick to the wall of the intestine and when the bacteria stick to the wall of the intestine the immune system starts acting to get rid of that bacteria and the immune system sends out all these chemicals that attack the bacteria but can also cause inflammation of the bowel.

So the theory is that the diet that we follow can create an environment that makes it easier for bacteria to stick to the wall of the gut and will promote the sorts of bacteria that are going to stick to the wall of the gut. There is now a belief that possibly following a diet that's going to help with the Crohn's disease and going to modify these factors will help people with their Crohn's disease.

One of the things that we know is that people who have got Crohn's disease have a slightly different gut microbiome to a healthy population. There are certain bacteria, I guess bad bacteria, that are increased in people that have Crohn's disease and there are a number of good bacteria that are decreased in people with Crohn's disease. So that adds strength to the argument that the gut microbiome is making a difference in Crohn's disease. The hypothesis is that a high-fat diet will breakdown some of the protective factors of the gut and make it easier for the bacteria to stick there. Certain additives like emulsifiers, maltodextrin and carrageenans can change the gut microbiome and create an environment that's more conducive to the bacteria sticking to the wall of the gut. Wheat might make the gut more permeable which makes it easier for the bacteria to get through and trigger the Crohn's disease and it might also alter the microbiome. Red meat and dairy might also affect the microbiome and promote the bad bacteria.

The diet that's been developed is designed to eliminate all the foods that can trigger the Crohn's disease but also promote the foods that can help to heal the gut in someone that's got Crohn's disease. So the Crohn's disease diet is nutritionally adequate, it's got enough vitamins and minerals of everything and it's got enough protein and all of the things that you need to heal the gut. Fifty percent of the energy from the Crohn's disease diet comes from a nutritional supplement because it's impossible to get enough vitamins and minerals without it. The diet includes chicken every day and eggs every day. You can get a resistance starch from cooked potatoes, bananas for resistance starch, a peeled apple for fibre and as well as these foods you're allowed to have rice and rice flour and a few fruits like strawberries and melon and a few vegetables. Because people

with Crohn's disease often have that stricturing disease, it's important that they don't have too much fibre at this stage of the diet. So as you can see it's a pretty limited diet.

The things that you can't have is pretty much everything else. You can't have processed food, you can't have red meat, you can't have tea and coffee, you can't have soy products, you can't have high fat foods. So it is a really challenging diet to follow. After six weeks of following the Crohn's disease diet you can introduce more fruits and vegetables and more of the high fibre fruits and vegetables. You're still encouraged to avoid the other things but you can introduce one slice of bread a day. After 12 weeks you can go onto a maintenance phase of the diet where you are allowed to have two days a week where you don't have to follow the diet. That's for sustainability that they know people aren't able to follow that really strict diet every single day of the week forever.

The evidence behind this, there's been two major studies on it which is still not a huge amount but this is an emerging field and the studies have been fairly well designed. The first one with children and adults showed that 90 per cent of patients had a clinical improvement after following the diet for six weeks and 62 per cent had achieved remission which is quite a bit thing to achieve with Crohn's disease. Then a large randomised controls trial compared following a full liquid diet which we knows work in Crohn's disease and following the Crohn's disease diet. They had very similar remission rates. So 85per cent success rate for both the diet and the liquid diet and generally they'd find that eating real solid food is still better than drinking a pure liquid diet for six weeks.

The question is should Cinderella be following the diet? The benefits are that it might be able to help her Crohn's and the research really shows that following this diet could help her to go into remission from Crohn's. The fact that she is facing bowel surgery, I think that it is probably a big thing to consider something that could decrease the need for the surgery. The diet is nutritionally balanced so we know she's not going to be getting micronutrient deficiencies and the diet has far fewer side effects compared with medications. It's also inexpensive, even if you're spending money on 200 g of chicken a day in comparison to Crohn's disease medications the amount of money that people spend on food is tiny because the Crohn's disease medications are expensive. With each step of the diet becomes easier to follow.

The problem is it is a difficult to follow. It's very monotonous. It makes socialising really hard for having a really strict diet that you need to follow and it's not going to be sustainable for everyone. But I think that if I was Cinderella and had a severe disease like Crohn's disease I think that it would be worth a shot.

The next diet is the ketogenic diet that we talked about. So this is our friend Rapunzel. She is considering going keto because she wants to lose weight. So a ketogenic diet is a type of low carbohydrate diet where you have only 20 to 50 g of carbohydrate each day. So to put this in perspective 50 g of carbohydrate is two pieces of bread and one banana. So not really that much carbohydrate. Carbohydrates are one of the three major sources of macronutrients or sources of calories along with protein and fats. Carbohydrates are sugars and starches and are found in fruits and grains, some vegetables and milk products.

So a ketogenic diet, you remember what the Australian Guide to Healthy Eating looked like, the ketogenic diet looks like this. The majority of your calories are going to come from fats, so things like cheese and meat and oils and avocado, 20 per cent of your calories are coming from protein, so meat. For this particular diet normally when we're talking about proteins we talk about vegetarian source of proteins and meat sources of proteins.

All vegetarian sources of proteins are quite high in carbohydrate and so if someone was a vegetarian pretty much rules out ketogenic diet because you would always be having too much carbohydrate. Five per cent of your calories should be coming from carbohydrates, so things like fruits and vegetables.

The ketogenic diet, I guess the rationale behind it is that it changes the fuel source that your body is using. So if you're eating a normal carbohydrate diet your body will break down the carbohydrates and the starches or sugars and turn them into glucose in your body. Your pancreas releases insulin, the insulin then unlocks all the cells of your body and enables that glucose to go into the cells of your body and the cells of your body use glucose as a fuel. If you're following a very low carbohydrate diet, you are getting most of your calories from fat, you're not going to have that surge of glucose in your blood and instead your body will start to convert fat and take it to the liver and turn that into ketones. Then the liver and other organs of your body will then use the ketones as their preferred fuel source. So you're just switching from burning glucose to burning ketones instead. Then that state of actually using ketones and converting fat into ketones is called ketosis.

It is really difficult to obtain good evidence on the long term effects of a ketogenic diet. For example one study where they put people on a ketogenic diet for 12 months. At the end of the diet they found that the majority of the people were actually following a fairly moderate carbohydrate diet and not following a low carbohydrate diet at all. So while that might be frustrating for the researchers because it's hard to tell the long term effects of a ketogenic diet, what it does tell us is that people who are told to follow a ketogenic diet for 12 months can't really do it. So it's a not very sustainable diet. The studies have suggested that a ketogenic diet can reduce triglycerides which would be a good thing and increase HDL which is the good cholesterol. They also show that they probably increase the LDL cholesterol which is the bad cholesterol. There are no really good long term studies looking at the adverse effects of the ketogenic diet.

There's a few different conditions where ketogenic diet is hypothesised as having some benefits and one of those is in cancer. There's not good, strong evidence for this yet. The rationale behind that is that tumour cells like to have glucose as their fuel source, so if you're providing them with ketones instead of glucose as a fuel source it will help cancer cells to die. It's a nice hypothesis and an interesting idea but we just don't have the evidence to be able to recommend that yet. The other thing is that if you've known anyone suffering from cancer it's really hard to eat enough food when you're following a normal diet. If someone is following a ketogenic diet and they can't eat half of the things they would normally eat, it's even harder to maintain your weight and maintain adequate nutrition as well. So that would be the big risk involved in following a ketogenic diet if you had cancer. There's also an idea that a ketogenic diet can be helpful for diabetes and that's the idea is that you're not putting much sugar in your body and then you're not going to have high blood sugar levels. There is a risk though that you'll get low blood sugar levels and that has it's own dangers, particularly for diabetics and there's not good evidence in the long term benefits of a ketogenic diet in diabetes either.

So overall Rapunzel wants to lose weight so the ketogenic diet can also be used as a weight loss diet. It might work because ketones can suppress the appetite and also having a large amount of protein and fatty foods might make you more full rather than having a lot of carbohydrate foods. You might also be losing weight because you can lose some of the fluid around your liver as well. So sometimes weight loss might actually not be real fat that you're losing it's just fluid. There have been a few studies looking at weight loss on the ketogenic diet and overall it showed that you will lose a similar amount of weight on a ketogenic diet compared with a normal healthy eating diet like the Mediterranean diet. So the main thing is that people will be able to lose weight with a ketogenic diet or a low carbohydrate diet but it's not more beneficial in comparison to the standard normal weight loss diets.

One of the problems with the ketogenic diet is it's not nutritionally adequate. You've got minimal dairy products in the diet and so you don't have enough calcium which risks osteoporosis, not enough folate which is often in grainy breads and cereals and that you run the risk of anaemia. Particularly bad for pregnant woman so someone who is pregnant shouldn't be following this ketogenic diet anyway and fibre and wholegrains, you're not going to get much fibre from the ketogenic diet either and that's got its own problems and could cause problems with the gut microbiome as well.

The ketogenic diet, is it sustainable? Well that study where they put people on it for a year showed that it's not really a sustainable diet, it's really hard to follow. The other problem would be that what if Rapunzel's hair broke because of the lack of nutrients. It would be a big risk to follow. Some of the side effects can also be bad breath because ketones have a bad breath, that morning breath smell and so that's not a very pleasant side effect either for people.

Our next diet is looking at the 5:2 diet. So we've got Hansel and Gretel here. They are both in their 70s and they are interested in trying the 5:2 diet. Hansel is 110 kg and he's got a BMI of 36 and I'll talk a bit about what BMI is in a minute. Gretel is 71, she weighs 79 kg and she's got a BMI of 29. She's got high cholesterol and Hansel is concerned because the doctor has told him he's prediabetic. Both of them have a goal to lose weight and also live happy and good life in their retirement.

So the 5:2 diet was popularised by a media person called Michael Mosley, who I'm sure a lot of you have heard of. The diet involves fasting on two days of the week, so eating only 25 per cent of your normal energy requirements on just two days of the week. The rest of the week you're allowed to eat a normal intake. The reported benefits are weight loss, decreasing the risk of certain cancers, decreasing the risk of some of the metabolic diseases associated with being overweight and improved cognitive impairment and that arrow should be going in the opposite direction. So the goals for someone who's over 65. Both Hansel and Gretel are over 65. Maintaining good health and good quality of life over 65 is really about maintaining function. Poor quality of life happens when you lose function, you lose the ability to do all the things that you've enjoyed doing in life. It's also really important to avoid debilitating conditions like strokes and heart attack because that can really impair quality of life. Having excess weight can make mobility more difficult and can make doing all the things you enjoy more difficult but also maintaining muscle mass is really important to maintaining good quality of life. Because if you want to do anything in life, play golf, play with your grandkids then maintaining a good muscle mass is really important.

Any weight loss that people do will always lead to a loss of muscle mass and so it's really important that if you are losing weight that you're losing weight in a way that's preserving as much muscle mass as possible. The question is for someone over the age of 65 is it even worth trying to lose weight because they risk losing their muscle mass. We need to look at what a healthy weight actually is and so we use BMI to help to gauge whether people are a healthy weight or not. If you want to calculate your own BMI you take your weight – and I've got that round the wrong way – your weight divided by your height in metres squared. So weight in kilos divided by your height in metres squared. You can go online and find lots of BMI calculators.

The healthy weight range has always been considered to be between 18 and 25 kg per metre squared. A large meta-analysis involving 35 different studies, so this looked at a huge number of individuals, looked at the risk of mortality at different BMIs for people over the age of 65. What they actually found was the healthiest weight or the lowest risk of mortality in people over the age of 65 was actually 23 to 29 kg per metre squared. So these are the diagrams that show the best weight for the lowest risk of mortality for men and women.

What these graphs show is mortality is really high when you're in that underweight category and mortality risk decreases as your weight increases until you get to around a BMI of 27. So 27 has the lowest risk of mortality in men over the age of 65 and then the risk of mortality creeps up again as your BMI goes through the 30s and up to 35 mortality increases again. But interestingly still it's worse to be underweight than overweight according to this mortality data. We can see that the healthiest weight for men is around that 27 mark and for women it's around the 27 mark as well, so around 25 to 30 is the best BMI for people over the age of 65. We then have different healthy weight categories for people under the age of 65 and over the age of 65.

Looking at this data Gretel is not actually overweight. Her BMI is 29 which is within the healthy weight range for her age group. It's probably not worth her trying to lose weight because she is already in the optimal weight range. Hansel is still above the healthy weight for his age so the question is would following the 5:2 diet be helpful for him to preserve good quality of life. In terms of the 5:2 diet there has not been a huge number of studies on it. So given the number of people that are following the 5:2 diet and how popular it is, it's disappointing that there aren't more studies on it. There's no studies at all in people over the age of 70. There's a few studies that compare intermittent fasting or the 5:2 diet or something similar to a 5:2 diet with a normal calorie controlled diet. What they showed is that all the weight loss diets showed a loss of fat free mass or muscle, so this is what I was saying earlier. Anytime you try to lose weight you're going to lose muscle as well as fat.

The 5:2 diet and the calorie controlled diet for the purpose of the studies had fairly similar calories but just had a different pattern of following that calorie restriction. So the standard diet is that you have a calorie restriction every day of the week and the 5:2 diet is where you have an extreme calorie restriction on just two days of the week. There have been no studies that show the particular metabolic benefits on a 5:2 diet compared with a normal calorie restriction diet. So a lot of those claims that it's better than a normal diet for all of those metabolic benefits haven't been backed up in the literature.

One diet that I'll discuss with you is the HELENA diet which is probably the biggest trial of a 5:2 diet style that has been done up until this date. That compared people on a 5:2 diet with people on a standard calorie controlled diet and with people that were just told about a healthy eating model which would have been fairly similar to that Australian Guide to Healthy Eating that I showed you earlier.

The people on the calorie restriction diets got regular phone calls to help keep them motivated on the diet and then they collected information on them at 12 weeks then at 24 weeks and then at 50 weeks. So what the diet has showed was that the people on the 5:2 diet lost weight more quickly but then when they weren't getting their phone calls anymore that plateaued out and they regained a bit of weight. They still were lighter than they were at the beginning but they had gained a little bit of weight.

The people on the standard calorie control diet lost a bit of weight too but not quite as much as the people on the 5:2 diet and they never got quite as low but then at the end point they had pretty similar weight loss. Then the control diet of people just told about the healthy eating, lost a little bit of weight too and I think part of that is being in a study where they know that people are going to be asking them about their diet and weighing them. Helps to keep people motivated as well. So they lost a bit of weight but then they regained the majority of the weight that they'd lost.

If we're looking at metabolic benefits as well, this is looking at glucose levels. So the people on the calorie controlled diet actually had the biggest drop in glucose levels and that sort of changed a bit as they went on but still were lower than those on the 5:2 diet and the normal control group as well. Overall it shows that the 5:2 diet doesn't have particular benefit for glucose.

The question is, is this diet going to be right for Hansel? Looking at whether the diet is nutritionally adequate for Hansel. His ideal weight is actually 83 kg and on his fast days should be having about 520 kcal per day. That is not enough kcal to eat your five food groups so you're not going to be getting enough nutrients on those days. The question is can he make up for it on other days if he's eating a lot of fruit and vegetables on all the other days or a lot of protein on the other days, is that going to make up for not having enough on those two days. Someone over the age of 65 should be having at least 1 to 1.2 g of protein per kg of body weight. What we know is that even one day of not having enough protein can accelerate the loss of muscle and so if Hansel is having two days a week where he's not going to get enough protein, he is going to have more muscle loss. We've seen that in some of the studies of the 5:2 that people will lose more weight on a fasting diet or a 5:2 sort of diet –they'll lose more muscle on a 5:2 style of diet compared with a normal calorie controlled diet.

So Hansel actually needs 83 to 100 g of protein per day and just 83 g of pure protein per day provides 332 calories which is very close to his actual total calorie limit. If we tried to get Hansel to have a really high protein low calorie diet of having boiled eggs, chicken breast, a bit of vege, a glass of skim milk he will achieve 553 calories per day but only 61 g of protein. So I tried a few different models and there was no way that I could get enough protein in with only 550 kcal per day.

The main attraction of the 5:2 diet is that you don't have to worry about calories except for two days a week so you can have normal life on the other five days. It might be sustainable for people for that reason and it could assist in weight loss for people under the age of 65. It might not be necessary for some people who are over the age of 65 to even lose weight. A lot of people out there might be thinking that they're overweight and if they do their BMI calculation they might not actually be overweight according to the over 65 healthy weight range. There's not enough evidence that there's really good metabolic benefits of following the 5:2 diet and we know that the 5:2 diet will not deliver enough protein for people on their fasting days. The 5:2 diet could actually decrease quality of life if it accelerates muscle loss.

Overall today what I hope I've made clear to you is that it's not a case of one size fits all when it comes to dietary advice. It's really important to be aware of where the information is coming from and being analytical about that source of information, whether it's a reputable source and also looking at whether the dietary advice is right for you personally. It might be okay for your neighbour but it might not be something that works for you. The best way to get dietary advice is to see a dietitian and there are dietitians in the community, private practicing dietitians or if you've got a medical condition and attending a hospital, seeing one of the dietitians in hospital would be the best way to make sure that your dietary regimen is going to be the best one for your health.

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South Metropolitan Health Service, Locked Bag 100 Palmyra DC WA 6961

Telephone (08) 6152 2222

www.southmetropolitan.health.wa.gov.au

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