

Report from SA Heart Congress 2009: Cardiovascular disease and the role of nutrition

A session at the SA Heart Congress 2009, held at Sun City in October, turned the spotlight on the key role that sound nutritional choices can play in controlling and even preventing cardiovascular disease. The meeting was sponsored by Flora Pro-Activ.

Prevention of cardiovascular disease in South Africa: the role of nutrition and risk factor control

Dr Krisela Steyn, Department of Medicine, University of Cape Town and the Chronic Diseases of Lifestyle Unit, Medical Research Council, Cape Town

The mortality rate is increasing in all race groups in South Africa, suggesting an accompanying rise in risk factors for chronic disease and unhealthy lifestyles. The AIDS epidemic and a burgeoning population cannot adequately explain this increase. 'When we look at the hard numbers in respect of cardiovascular disease (CVD), there's no doubt that they're increasing. We therefore cannot forget about CVD and chronic disease generally. They're alive and well in every single province of our country', said Dr Steyn.

Most people with chronic diseases die before the age of 65. These are premature deaths and a loss to the economy that Dr Steyn views as an indictment of our treatment of chronic disease. 'These premature deaths cry out for better prevention and treatment. CVD kills 200 people in South Africa every day.'

She emphasised that when it comes to prevention, clinicians need to think about the lifelong impact of chronic disease and its risk factors. She cited some alarming findings from a Medical Research Council study on the impact of a variety of modifiable CVD risk factors on mortality in individuals aged 30 years and older:^{1,2}

- obesity: 32 men and 68 women die each day
- physical inactivity: 20 men and 26 women die each day
- tobacco use: 93 men and 28 women die each day
- hypertension: 53 men and 78 women die each day
- diabetes: 23 men and 29 women die each day
- hypercholesterolaemia: 30 men and 36 women die each day.

She pointed out that despite effective treatments, control of both hypertension and raised cholesterol levels is poor. 'Similarly, our treatment of diabetes leaves much to be desired. Given that overall risk increases exponentially rather than additively, when multiple risk factors are present, we need to use all the tools we have to assess and manage global risk. It's sobering to think that these preventable risk factors are responsible for 40% of deaths.'

When it comes to nutrition, the following are key issues: insufficient fibre and vitamin intake, inadequate fruit and vegetable consumption, too much fat (especially saturated and trans fats), excessive alcohol consumption, and high salt and low potassium intake. These have far-ranging impacts in respect of their role in diabetes, obesity, hypertension and hypercholesterolaemia. 'And the longer you live with any or all of these, the greater the likelihood of your having a stroke or heart attack, or developing renal

disease or certain cancers.'

The typical western diet therefore needs to be modified. Dr Steyn believes that there are three levels at which this issue needs to be addressed – individual, community and policy making. Individual measures include the balancing of energy intake and expenditure, the eating of a healthy diet rich in fruit and vegetables and low in salt and fat, the avoidance of tobacco, the moderate use of alcohol and regular aerobic exercise.

Community measures include the development of locally suitable and consistent health messages, the promotion of workplace and community programmes on healthy lifestyle, the development of programmes on healthy lifestyle in schools, the introduction of smoking cessation programmes in primary healthcare settings, and improvement in product quality on the part of the food industry.

On the macroscopic level, policy makers can influence consumption patterns through the judicious implementation of taxes and subsidies, introducing increasingly stringent tobacco control measures and allocating money for further research into health and nutrition.

The clinical evidence for the cholesterol-lowering efficacy of phytosterol-enriched foods

Dr Guus Duchateau, science leader: Bioavailability and ADME, Unilever R&D, Vlaardingen

Following Dr Steyn's general overview of nutrition and CVD, Dr Duchateau turned the spotlight on the specific role of phytosterols (also called plant sterols), naturally occurring compounds found in vegetable oils as well as certain cereals, fruits and nuts. 'Research on their cholesterol-lowering effect dates back to the 1950s', he said. 'Today, more than 170 human studies have shown that they effectively lower total and LDL cholesterol, and achieve these reductions independently of the food format in which they're ingested. Over time, these findings have not gone unnoticed and the National Cholesterol Education Programme and International Atherosclerosis Society guidelines now both recommend a daily intake of 2 g of phytosterols daily.'

Different studies have looked at various doses and food formats. A 2003 meta-analysis of 41 studies showed that 2 g/day reduced LDL cholesterol by 10% but that higher intakes added very little additional benefit.³ A 2008 meta-analysis of 59 studies produced similar findings.^{4,5}

It has also been shown that the benefit is unaffected by whether the phytosterols are taken in fat-based or non-fat-based foods. Likewise, there is no difference between dairy and non-dairy products. When it came to frequency of intake, once a day significantly lowered LDL cholesterol, but when the intake was twice a day or more, the positive effects were even more pronounced.

Dr Duchateau cited the following reductions in groups with specific CVD risk factors:

- familial hypercholesterolaemia: 0.65 mmol/l

- diabetes: 0.31 mmol/l.

'Phytosterols can therefore make a valuable contribution to the diets of these patients', he said.

Various studies examining the role of phytosterols and statins have found that they work synergistically and that the additive effect comes with no adverse interactions. People taking statins achieve a 32% reduction, those on sterols an 8% reduction, while those taking both showed a 39% reduction. Combining sterols with fibrates showed a similar pattern. Dr Duchateau cautioned, however, that they confer no additional benefit when used in combination with ezetimibe.

It is therefore important to consider additive effects when treating cholesterol. A generally healthy diet has been shown to contribute to cholesterol lowering – and adding phytosterols can enhance that by an additional 10%. These findings have also been borne out in long-term efficacy trials that have shown reduction in long-term risk of the order of 20%. Dr Duchateau feels there is therefore sufficient scientific evidence to promote the use of sterols in those at risk for CVD.

Summing up, he emphasised that 2 to 2.5 g/day produces a 9 to 10% reduction in LDL cholesterol, but that the effect plateaus between 2.5 and 3 g daily. The efficacy is similar regardless of food format, and single and multiple daily doses are both effective. These findings hold true in normo- and hypertensives, diabetics, and individuals with familial hypercholesterolaemia. Phytosterols enhance the benefits achieved with statins and a healthy diet.

Nutrition in heart failure management

Sandra Pretorius, registered dietician, Chris Hani Baragwanath Hospital, Johannesburg

Heart failure is a complex syndrome, and is usually the final pathway of most forms of CVD. It is accompanied by a constellation of signs and symptoms and requires both pharmacological and non-pharmacological management by a multidisciplinary team. Non-pharmacological management includes both dietary and lifestyle measures.

'It is important to choose foods containing little or no salt', said Ms Pretorius. 'The current recommendation is 2 to 3 g per

day. It's also important to take in sufficient fluids, stop smoking, limit alcohol intake and structure an exercise programme. Non-compliance is associated with an increase in hospital readmissions, so self-care is of paramount importance.'

Compliance is enhanced when patients believe the treatments they're receiving are safe and effective and that they will receive on-going support and education. Barriers to adherence, when it comes specifically to maintaining a low-sodium diet include little knowledge of the sodium content of various foods, perceptions of unpalatability and inadequate reading of food labels.

'Studies also suggest that malnutrition plays a role in heart failure', continued Ms Pretorius. 'It has been associated with impaired quality of life, further progression of disease and high rates of morbidity and mortality.' Her findings suggest that it plays an important role in the natural history of the disease in the developing world, where particularly a lack of vitamin C contributes to increased oxidative stress. 'Our preliminary data show inadequate vitamin C intakes in both men and women in a group of urban black Africans. We therefore need to increase fruit and vegetable consumption and we need more education and awareness to achieve this.'

References

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The Floro pro.activ spread available in South Africa contains 2–2.5 g of plant sterols per 25-g serving.