

Diet or exercise to prevent diabetes?



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Obesity is now recognised as a global epidemic, and is a risk factor for many chronic conditions including CVD, some cancers, asthma and type 2 diabetes. Prevention of chronic conditions has begun to work its way to the top of the political agenda and the most robust evidence for prevention comes from interventions to prevent diabetes.

There is now compelling evidence from randomised controlled trials showing that type 2 diabetes can be prevented by lifestyle changes, both in Westernised societies (Tuomilehto et al, 2001; Knowler et al, 2002) and in the developing world (Ramachandran et al, 2006). Typically, a multifactorial approach has been utilised that addresses three components: dietary change, increased physical activity and behavioural interventions. This approach has been found to be effective in the studies conducted to date, but there is some question about efficacy when applied to general populations rather than under study conditions. Many people find lifestyle changes very challenging and the expectation that they are willing and able to make changes to both dietary intake and physical activity may be too demanding. So, is one component of these lifestyle programmes more effective than another? Are people able to adopt either diet or exercise as a prevention strategy with similar results?

There is very little evidence suggesting that one intervention is more effective than the other; only one randomised study has examined a comparison of different approaches in people with impaired glucose tolerance, a risk factor for type 2 diabetes. This study

compared diabetes incidence in different groups allocated to diet only, exercise only, or both diet plus exercise interventions and compared outcomes with a control group with no intervention (Pan et al, 1997). Over 6 years, there was significantly lower incidences of diabetes in all the intervention groups compared with the control group, with no difference between the three intervention groups. These results are supported up by a recent meta-analysis which showed no difference between studies using either diet, exercise or a combination of the two for diabetes prevention (Gillies et al, 2007). However, it should be noted that there are very few studies using either diet or exercise alone as interventions for diabetes prevention and the reported absence of effect may be due to relative lack of evidence.

The most important risk factors for type 2 diabetes are overweight and obesity – increases in BMI greatly increase risk of type 2 diabetes and this is especially true of women from ethnic groups who are already at greater risk of diabetes (Shai et al, 2006). Intervention studies have shown that this increased risk can be reduced by weight loss; data from the Diabetes Prevention Programme in the US suggest that for every 1kg weight loss, there is a 16% reduction in risk of diabetes (Hamman et al, 2006). The recommendation is that interventions to reduce diabetes risk should primarily target weight reduction.

Is diet or exercise more effective in promoting weight reduction?

There is very little evidence that exercise interventions alone are

effective for weight reduction, although exercise does play an important role in weight maintenance (Shaw et al, 2006). There are very few studies exploring the role of exercise in weight-loss and a recent meta-analysis suggests that the role of exercise independent of other factors is unclear (Yates et al, 2007). Increased physical activity is associated with a reduction in cardiovascular risk and improvements in general health, but its role in weight-loss remains uncertain (Karmisholt, 2005). In contrast, there is limited evidence that dietary interventions for weight-loss are effective (Franz et al, 2007), although many dietary studies are limited by poor methodology (Dansinger et al, 2007). Epidemiological studies have shown that there are other dietary components that appear to protect against diabetes (Box 1).

In conclusion, it is not clear whether diet or exercise is the most effective in diabetes prevention, although the benefits of weight-loss are clear. At present, the most effective strategy for diabetes prevention appears to be lifestyle modification including both diet and increased physical activity. ■

Box 1. Dietary components that appear to protect against diabetes.

Higher intakes

- leafy green vegetables
- fish
- poultry
- wholegrains.

Lower intakes

- red meat
- processed meat
- french fries
- foods containing trans-fats
- high-fat puddings

Other dietary patterns

- coffee drinking
- moderate alcohol intakes.

Bidel et al, 2007; Fung et al, 2004; Wannamethee et al, 2003

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