ABSTRACTS

From the literature

The Finnish Diabetes Prevention Study. Uusitupa M, Louheranta A, Lindstrom J et al. Brit. J. Nutr. *2000; 83(Suppl. 1): S137–142.*

On a worldwide basis it is estimated that the number of diabetic patients will double in the next 10–15 years. Due to the considerable cardiovascular mortality and morbidity associated with diabetes, interest has grown in primary prevention, particularly in relation to type II diabetes.

This study was thus designed to provide a definite answer to the question of whether primary prevention of type II diabetes could be modified by lifestyle modification. This studied differed from others in that a non-pharmacological approach was taken.

A total of 523 overweight (BMI > 25) subjects with impaired glucose tolerance (IGT) were recruited to take part in this randomized multicentered study.

The intervention group had an individualized diet and exercise program which was closely supervised and monitored. The control group received dietary advice at the start of the study and general lifestyle information about smoking and alcohol consumption. The main end point was the development of new diabetics with secondary outcome measures of glucose tolerance, insulin values, cardiovascular (CVS) risk factors, CVS scores, CVS morbidity and mortality and quality of life.

This paper gives a 1 and 2 years interim report on the study. At the end of 1 year weight reduction was greater in the intervention group, with 43.3% achieving a 5 kg weight reduction. A similar achievement occurred at 2 years. In terms of the cardiovascular risk factors the 2 hours glucose, fasting and 2 hours insulin levels, systolic and diastolic blood pressure and serum triglycerides were all significantly reduced at 1 year and this level of reduction was sustained at 2 years.

While it is acknowledged that whether this program will be successful in the long term in preventing or postponing the development of type 11 diabetes would need a follow up study, these early results would suggest the efficacy and feasibility of the diet and exercise intervention approach.

Beneficial effect of high dietary fiber intake in patients with type 2 diabetes mellitus. Chandalia M, Garg A, Lutjohann D et al. N. Engl. J. Med. *2000; 342: 1392–8.*

Some contention exists about the effect of fiber in lowering blood glucose. The American Diabetes Association published revised dietary guidelines for patients with diabetes mellitus in early 2000. A moderate increase in dietary fiber from 20 to 35 g was recommended due to the cholesterol lowering effects of fiber, however, the effects of dietary fiber on glycemic control were considered inconsequential.

The aims of this study were to determine the effects on glycemic control and plasma lipid concentrations of increasing the intake of dietary fiber in patients with type 2 diabetes using food not fortified with fiber.

The study designed consisted of a randomized, crossover study. A total of 13 patients with type 2 diabetes were recruited from a general clinical research center in America. Initially patients followed a diet containing moderate amounts of fiber (total 24 g, 8 g of which is soluble) for 6 weeks and then used a high fiber diet (50 g in total, 25 g of which was soluble) for a further 6 weeks. In order to eliminate confounders, the meals were prepared in a research kitchen which meant that the two study diets were isocaloric and the macronutrient composition was identical. There was a 1 week break between the two study periods.

At the end of the study period patients' were hospitalized for a day in order to complete the evaluations. The mean daily preprandial and 24 hours plasma glucose concentrations were found to decrease with a high fiber diet, as did the 24 hours insulin concentrations. In contrast to other studies involving high fiber which did not demonstrate any relationship to glucose control; this study used predominantly soluble fiber in increasing total dietary fiber. This appeared to be associated with a significant improvement in glycaemic control and decreased the degree of hyperinsulinaemia in type 2 diabetic patients.

One of the main conclusions of this study was that in recommending an increase of fiber, this should involve consumption of unfortified foods rather than fiber supplements.

Promoting weight loss in type II diabetes. Brown SA, Winter M, Upchurch S et al. Diabetes Care *1996; 19: 613–24.*

This paper is a systematic review of 89 studies which involved 1800 participants. The reviews were obtained after Medline searches from 1966 to 1994, Combined Health Information Database from 1978 to 1994, Psychological abstracts from 1967 to 1994, Eric from 1966 to 1994 and Dissertation abstracts from 1961 to 1994.

The aim of this review was to look at the effectiveness of behavioral therapies, exercise, diet, anorectic drugs, surgery or a combination of strategies to promote weight loss in type II diabetic patients.

Six criteria were applied to each study in order to determine the validity of the inclusion studies.

The results of the review found that diet alone had the largest statistically significant effect on both weight loss and metabolic control; whereas behavioral therapies alone or exercise alone had the least impact. Few studies attempted any long-term follow up.

These findings led the authors to conclude that dietary strategies are the most effective method for encouraging short-term weight loss in type II diabetics.

Commentary

Type II diabetes mellitus is a worldwide problem for both developed and developing countries. The associated morbidity and mortality is so high that much research activity is being directed at prevention or at least delaying the onset of the disease if possible. These three papers all address issues of prevention or reducing risk factors associated with diabetes using non-pharmacological means.

The Finnish Diabetes Prevention study has particular interest for primary care as the method is designed to have easy replication in a primary care setting. Although there was purposive sampling in order to specifically target the IGT group of patients, many of the findings are likely to be relevant in a general practice setting. More details of the rigor of the program would be interesting in order to gauge the likely direct application however, as motivation, compliance and being able to sustain the program are often the key limiting features in a community setting.

The second study was undertaken in a highly selected group, on a very small sample which makes it hard to estimate the likely generalizability of the findings. However, the strong results suggest that a high intake of dietary fiber especially of the soluble variety may have benefits, not just on lowering cholesterol levels but also on lowering the glucose and insulin levels. An even more interesting finding was that this was obtained from non-fortified foods rather than dietary supplements. This study would be an interesting one to repeat in a primary care setting.

Weight loss is an important therapeutic component of managing Type II diabetics. Choosing the most cost-effective method to recommend to our patients for loosing weight is important, making this third study an interesting one for primary care. The authors conclusions state quite clearly that diet alone is the most statistically significant intervention for both weight loss and metabolic control. The Cochrane Collaboration reviewers who reviewed this paper added a word of caution by pointing out that the results are mainly based on the findings of non-experimental papers. This introduces a number of inconsistencies in the findings. They therefore recommend caution in adopting the authors' conclusions.

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For further reading

1 Venkat Narayan KM, Bowman BA, Engelgau ME. Prevention of type 2 diabetes. *BMJ* 2001; **323**: 63–4.

2 Hu FB, Manson JE, Stampfer MJ *et al*. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N. Engl. J. Med.* 2001; **345**: 799–97.