Lifestyle intervention in first-degree relatives of patients with type 2 diabetes

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Abstrakt

Type 2 diabetes is increasing worldwide, mainly due to unfavorable changes in diet and physical activity. Prevention strategies to slow this development are urgently needed. First-degree relatives of type 2 diabetic patients (FDR) have an increased risk of developing the disease. Lifestyle intervention in these and other high-risk individuals is one way of addressing the problem. Intervention strategies should not only be effective but also keep resource needs to a minimum. The aim of this study was to assess the feasibility and short- and long-term effects of an intervention program for implementing lifestyle change in non-diabetic FDR. One hundred FDR, recruited from the Göteborg area of West Sweden were screened. Seventy-seven non-diabetic men and women (aged 25-55 years) were included in the study and allocated to one of three arms: Diet group (D), Diet + Exercise (DE) group and Control group. The program’s goals for diet and physical activity were based on The Nordic Nutrition Recommendations. Intervention groups received group counseling on two occasions and follow-up through unannounced telephone interviews. Effects of intervention were studied after 16 weeks, 1 year and 2 years. Changes in dietary intake and physical activity were monitored by questionnaires. Fatty acid composition of the erythrocyte membrane was used as an objective measure of polyunsaturated fatty acids intake. Treatment effects were measured by body weight, waist circumference, sagittal diameter, oral glucose tolerance test, insulin sensitivity, fasting insulin, fasting blood glucose and blood lipids.

Compared to Controls, short-term results (16 weeks) in intervention groups showed improvements in diet and erythrocyte membrane composition. Physical activity increased, but only in persons initially "inactive". Further, the Diet group showed a reduction in LDL cholesterol and Apolipoprotein B values, while body weight and waist circumference decreased in group DE. At 1-year follow-up the ratio of LDL/HDL cholesterol was significantly decreased in group D compared to Control as was the body weight in group DE. Two-year follow-up (no Controls) showed that dietary changes were sustained to a large degree, confirmed by fatty acid composition of the erythrocyte membrane. The "inactive" maintained their increased physical activity. Reductions from baseline were seen in LDL cholesterol in group D and in body weight and fasting insulin in group DE. Evaluation of attitudes to dietary changes, performed after 1 year of intervention, showed that advice was generally well perceived and adopted, especially advice aimed to improve dietary fat quality. In conclusion, the intervention program gave short- and long-term effects on lifestyle and metabolic variables that may lead to reduced risk for type 2 diabetes, and was well received in this high-risk population.