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Original Article

Sustained gains from a diabetes prevention program and the role of telephone support

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ABSTRACT

Background: An evaluation of the sustainability of lifestyle changes was undertaken for participants completing a 12 month diabetes prevention program. This second part of the study also tested whether regular structured telephone calls could be effective in maintaining lifestyle changes.
Methods: Originally, 237 participants completed a 12 month group-based lifestyle intervention study. They were aged 40–75 years, with a moderate to high risk of developing type 2 diabetes. Participants were then randomised to telephone support ($n = 107$) or self-care only ($n = 98$) for 18 months, and re-assessed using anthropometric, clinical, psychological and general health measures.
Results: A total of 164 participants (85 telephone support and 79 self-care only) completed the follow-up. Changes between 12 and 30 months for the telephone support group were not significantly different from those found in the self-care only group. Beneficial lifestyle changes achieved by participants were generally sustained after the diabetes prevention program, with the exception of fasting plasma glucose and some psychological measures.
Conclusions: Positive outcomes achieved at 12 months were generally maintained after a further 18 months. Telephone support did not appear to produce additional benefits.

1. Introduction

Type 2 Diabetes Mellitus (T2DM) is a major current health concern worldwide [1,2]. The risk of developing T2DM is attributable to both environmental and genetic factors [1], but the recent increase in incidence seems to be mainly due to lifestyle factors, such as dietary habits and lack of physical activity [3]. In 2004–2005, about 700,000 Australians, or 3.6% of the population [4], were diagnosed with diabetes. About half of those who have diabetes are not aware of their condition [5]. Of those with diabetes, around 83% have type 2 (non-insulin dependent) diabetes [4]. It is estimated that about 10.6% of Australians may have pre-diabetes or impaired glucose tolerance [5], which is an early indicator for developing diabetes (about one in three will go on to develop type 2 diabetes).

In 2004–2006, the Greater Green Triangle University Department of Rural Health (GGT UDRH) developed a diabetes prevention program (GGT DPP) for use in Australian primary health care settings among English speaking groups [6]. The study provided evidence that a type 2 diabetes prevention program using lifestyle intervention is feasible in primary health care settings in Australia. Results at 12 months included a mean weight reduction of 2.52 kg and waist circumference by 4.17 cm, and an imputed risk reduction for T2DM of 40%. There was also a reduction in fasting and 2-h glucose values.

The GGT DPP was based on the Finnish Diabetes Prevention Study (DPS) clinical trial [7] and the Good Ageing in Lahti Region (GOAL) Lifestyle Implementation Trial [8] which was conducted in a primary health care setting. Both of these interventions used a lifestyle behaviour change approach for those at high risk. The Finnish DPS showed a 58% relative risk reduction of T2DM after a mean intervention period of 3.2 years [9]. The corresponding figure at a median of seven years total follow-up was 43% [10]. The GOAL Lifestyle Implementation Trial also reported sustainable results at 3 years [11].

Components of an ideal ongoing program to sustain lifestyle changes achieved are yet to be determined. Recent studies evaluating use of the telephone as a primary method for delivering lifestyle and chronic disease management interventions have shown promising results [12]. The telephone has considerable and

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increasing potential: it is relatively inexpensive, widely available, not limited by geographical barriers, and is being increasingly adopted by large government and non-government organisations with the capacity to deliver large-scale interventions.

The hypotheses in this study were: (1) that gains achieved at 12 months would be sustained at 30 months and (2) that a continuing telephone support program with group facilitators would result in better maintenance of the measured outcomes 18 months after completing the original 12 month GGT DPP intervention.

2. Materials and methods

2.1. Design and recruitment of main intervention

The GGT DPP was conducted in Victoria and South Australia in 2004–2006, using primary health care as a setting to reduce the progression to T2DM [6]. The Finnish Diabetes Risk Score (FINDRISC) tool [13] was used in general practice in three regions to identify patients at high risk of developing T2DM. On this scale, scores range from 0 to 26. A score of $\geqslant 12$ predicts the development of T2DM in more than one in six individuals within 10 years. A minimum score of 12 was the main criterion for recruitment. The recruits were given an oral glucose tolerance test, and those who were found to already have diabetes were referred for treatment to their family doctors. The study participants included those with impaired fasting glucose and impaired glucose tolerance, as well as normoglycaemia. The intervention model used in this study, described in detail elsewhere [6], was based on the approach of the Finnish GOAL study [14]. The program consisted of six two-hour group sessions, the first five over eight weeks and the last delivered at 8 months. A goal setting and planning approach was used to enhance behaviour change in physical activity and dietary habits. Regular self-assessment was used to empower participants to make personal short and long term goals, and create structured plans to achieve these. As in the Finnish study [10], five goals were targeted with these aims: (1) less than 30 percent of the total energy intake from fat, (2) less than 10 percent of total energy intake from saturated fat, (3) more than 15 g of fibre/1000 calories, (4) more than 4 h/week of moderate level physical activity and (5) more than five percent weight reduction.

In total, 311 individuals (88 men and 223 women) aged 40–75 years were eligible to participate.

2.2. Randomisation

According to facilitator records, 228 individuals were expected to complete the GGT DPP and be willing to participate in the follow-up. Participants within the session groups were pre-emptively divided equally, randomised into a group receiving telephone support and a group without telephone support (self-care), with 11 married couples kept together to limit contamination. Inclusion criteria for the follow-up required that participants complete the GGT DPP and not have pre-existing T2DM.

As the end of the GGT DPP overlapped with the beginning of the follow-up, participants expected to complete the GGT DPP were not necessarily the same as those who actually completed the GGT DPP. Of 311 individuals who began the original intervention, 237 attended both baseline and 12 month health checks and at least one of the six sessions of the program (Fig. 1). After the initial randomisation of 228 individuals, seventeen not completing the GGT DPP and four diagnosed with T2DM at 12 months were excluded. Another two who received the GGT DPP intervention despite being outside the age limit were also excluded. The remaining 205 were allocated to telephone support ($n = 107$) and self-care only ($n = 98$).

2.3. Telephone support follow-up

The telephone support group received regular calls from specially trained nurses, mainly recruited from the original GGT DPP [6], supervised by a clinical health psychologist with experience in chronic disease management and T2DM intervention programs. Calls followed a semi-structured interview. The questionnaire referred to by the nurses contained the personal goals (physical activity and diet) that had been set at the end of the 12 month intervention, and specific questions on achievement, compliance, and difficulties encountered. Nurses recorded this information, and gave advice and encouragement towards achieving and maintaining these goals. If necessary, support materials were sent to participants, or they were referred to a relevant support service

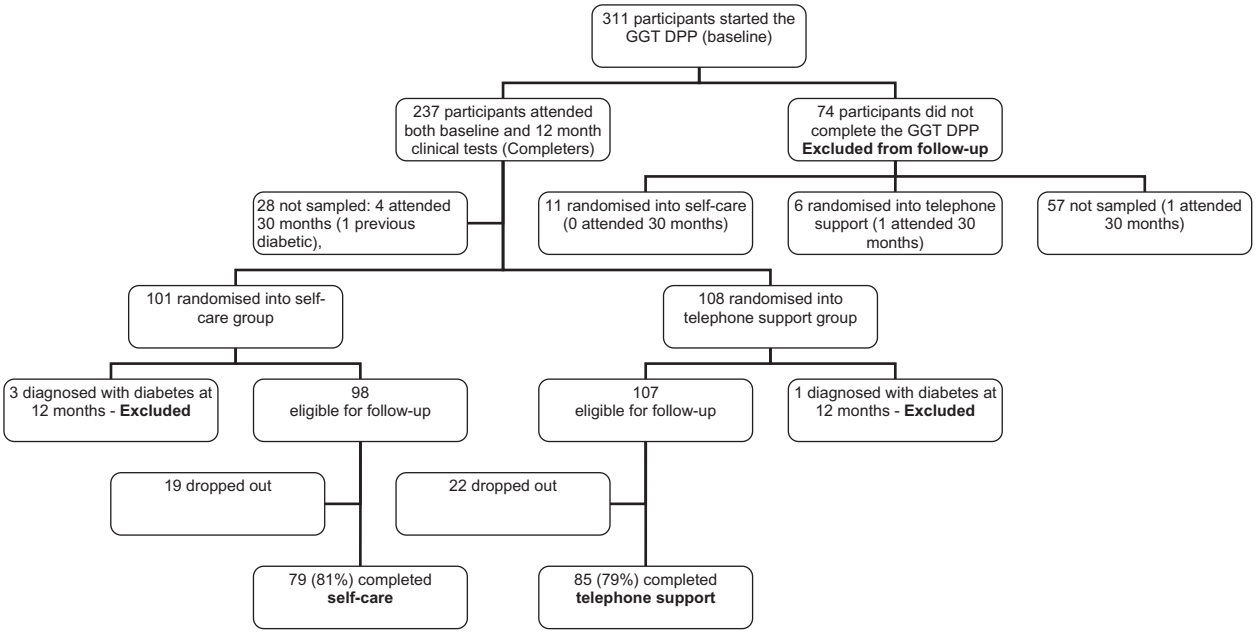

Fig. 1. Participants in the study.