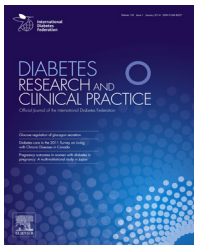
Contents available at ScienceDirect

Diabetes Research and Clinical Practice

journal homepage: www.elsevier.com/locate/diabres

International Diabetes Federation



Brief report

Evaluation of a community Diabetes Prevention Program delivered by diabetes educators in the United States: One-year follow up

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ARTICLE INFO

Article history:
Received 25 June 2014
Received in revised form
2 October 2014
Accepted 18 October 2014
Available online 23 October 2014

Keywords:
Diabetes prevention
Lifestyle intervention
Prevention
Diabetes Prevention Program
Group Lifestyle Balance

ABSTRACT

Strategies for management of pre-diabetes within the community setting are needed. An adaptation of the successful Diabetes Prevention Program lifestyle intervention delivered by trained diabetes educators was evaluated. Results indicate that trained diabetes educators offer an important community resource for health care providers for their patients with pre-diabetes.

1. Introduction

In the United States (U.S.), it is common for primary care providers to refer their patients with diabetes to educators for diabetes self-management education (DSME) [1]. For the patient with pre-diabetes, the strategy for care is often less clear. Patients with pre-diabetes may be given written handouts, advice on weight loss and physical activity, or increasingly, referred to diabetes educators. While diabetes educators are well-prepared for provision of DSME, they generally do not receive training specifically targeted for delivery of behavioral lifestyle intervention for the prevention of Type 2 diabetes. With an estimated 86 million adults estimated to have pre-diabetes in the U.S. [2], strategies for management of this condition within the primary care setting are needed.

Several clinical trials, including the Diabetes Prevention Program (DPP) in the U.S., have demonstrated the development and successful implementation of lifestyle intervention for the prevention of Type 2 diabetes [3–6]. The DPP lifestyle intervention also reduced risk for the development of the metabolic syndrome [7] and lowered risk factors for cardiovascular disease (CVD) [8]. DPP translation efforts in the

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http://dx.doi.org/10.1016/j.diabres.2014.10.012
0168-8227/

community have focused on delivery of adapted versions of the intervention by health professionals and lay health workers in a variety of settings [9–17], but lifestyle intervention delivered by trained diabetes educators has not been widely reported. Therefore, a pilot research evaluation was conducted to examine whether individuals with pre-diabetes and/or the metabolic syndrome who participated in an adapted DPP lifestyle intervention delivered by trained diabetes educators could reduce their risk factors for Type 2 diabetes and CVD. Initial results were favorable [18]; however, the purpose of this brief report is to provide the long term follow up results which are now available from the 12 month post-intervention assessment.

2. Methods

The study design and methodology have been reported previously [18] but are described briefly. The DPP intervention was adapted by the University of Pittsburgh Diabetes Prevention Support Center (DPSC) to the one-year Group Lifestyle Balance™ (GLB) program for delivery in the community setting. A non-randomized prospective study design was utilized in which diabetes educators in three outpatient hospital DSME programs (urban, suburban, and rural) received training and support for delivery of the GLB program from the DPSC. Overweight/obese adults with pre-diabetes (fasting glucose 100–125 mg/dl) [19] and/or the metabolic syndrome (NCEP ATPIII definition) [20] were eligible to enroll in the program with physician referral. For eligibility purposes, previous lab work completed in the medical setting within the year prior to enrollment was utilized for confirmation of these conditions. Participant recruitment was completed through an existing network of primary care physicians and local endocrinologists who were already referring patients with diabetes for DSME. In addition, the diabetes educators advertised in their local newspapers and posted program flyers at several community sites.

The GLB program includes the same goals for weight loss and physical activity as the DPP: achievement of weight loss of 7% from starting weight, and increasing physical activity to 150 min/week [14]. Enrolled participants attended 12 weekly sessions conducted by the trained diabetes educators. Each session was approximately one hour, and participants were asked to complete home assignments including self-monitoring of eating and physical activity. After conclusion of the initial 12 sessions, participants attended monthly meetings for 9 months to collect weight and activity minutes, and for provision of support for healthy lifestyle change.

Based on the weight loss seen in previous GLB evaluations, and similar to the trend seen in the DPP at approximately 3 months, it was estimated that enrollment of approximately 96 subjects would provide >99% power with alpha = 0.05 to detect a 3.5% and/or 7% weight loss and >92% power to detect a 6% change in glucose; further that these numbers would allow for 25% participant attrition, with >99% power for 3.5% and for 7% weight loss, and 85% power for change in glucose. The mean change between pre and post intervention measures was analyzed using the Paired Student's *t*-test when change data were normally distributed; however, for most measures the non-parametric Wilcoxon Matched-Pairs Signed Rank test was used. Baseline and 4 month post-intervention results were presented previously; this report provides long-term results for participants followed for one year from commencement of the GLB program ($n = 52$).

3. Results

A total of 81 participants enrolled in the study (71 female, 10 male) (Table 1). At the conclusion of one year, 52 (64%, 43 female, 9 male) participants completed a clinical assessment (Table 2). All study participants were invited to attend this final clinical assessment regardless of the number of intervention sessions attended, or whether they completed previous assessments. Reasons reported for drop out included illness, traveling, lack of time, and work-related issues. There were no significant differences noted in age, gender, race, education level, or baseline weight between those who completed the 12 month assessment and those who did not. For those who completed the 12 month assessment, the median number of sessions attended over the course of the year was 14 out of 21 possible sessions, while the median number of core and post core sessions attended was 10 of 12, and 3 of 9, respectively. The total number of sessions attended was positively correlated with weight loss at 12 months ($p = 0.03$) as was the number of core sessions attended ($p = 0.04$). However, the number of post core sessions attended

Table 1 – Baseline characteristics for total group.

	Male ($n = 10$)	Female ($n = 71$)	Total ($n = 81$)
Age, mean (range)	52.3 (39–66)	53.0 (26–80)	52.9 (26–80)
Caucasian, *n* (%)	9 (90)	69 (97)	78 (96)
Employed full-time/part-time, *n* (%)	6 (60)	54 (76)	60 (74)
Education, *n* (%)			
High School/GED	1 (10)	17 (24)	18 (22)
Some College/Tech	5 (50)	32 (45)	37 (46)
College Graduate	1 (10)	17 (24)	18 (22)
Graduate Degree	3 (30)	5 (7)	8 (10)
Smoking, *n* (%)	1 (10)	6 (8)	7 (9)
Family history of diabetes, *n* (%)	4 (40)	38 (54)	42 (52)
Family history of heart disease, *n* (%)	2 (20)	49 (69)	51 (63)
Pre-diabetes (glucose 100–125 mg/dl, 5.6–6.9 mmol/L), *n* (%)	6 (60)	34 (48)	40 (49)