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A primary care based healthy-eating and active living education session for weight reduction in the pre-diabetic population



Daniala L. Weir^a, Steven T. Johnson^{b,*}, Clark Mundt^b, Dianne Bray^c, Lorian Taylor^d, Dean T. Eurich^a, Jeffrey A. Johnson^a

^a School of Public Health, University of Alberta, Edmonton, Alberta, Canada

^b Centre for Nursing and Health Studies, Athabasca University, Athabasca, Alberta, Canada

^c St. Albert-Sturgeon Primary Care Network, Alberta, Canada

^d Nutrition Services' Alberta Health Services, Alberta, Canada

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ABSTRACT

Aims: Many studies have demonstrated the effectiveness of primary prevention strategies in type 2 diabetes, however, questions remain around the feasibility of high resource, intensive interventions within a healthcare setting. We report the results of a dietitian-led pre-diabetes education session targeting healthy eating and active living as strategies for weight reduction.

Methods: Participants were asked to complete a baseline questionnaire prior to completing the pre-diabetes education session and were sent follow-up questionnaires at 3 and 6 months. Differences between participants at baseline, 3 and 6 months were determined using χ^2 , t-tests and ANOVA.

Results: Of the 211 participants asked to fill out baseline questionnaires, 45 participants completed questionnaires at baseline, 3 months and 6 months. Although we observed general trends towards improvements in diet, physical activity and weight related behaviours among the 45 completers, no significant changes were observed among participants between questionnaire periods.

Conclusion: A “one-off”, theory-guided group education session may be insufficient to support lifestyle modifications in the context of weight management in a pre-diabetic population. Further evaluation of the efficacy and feasibility of the PCN as a setting for lifestyle intervention is required.

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* Corresponding author at: Centre for Nursing and Health Studies, Faculty of Health Disciplines, Athabasca University, 1 University Drive, Athabasca, AB T9S 3A3, Canada. Tel.: +1 780 248 1936.

E-mail addresses: daniala@ualberta.ca (D.L. Weir), sjohnson@athabascau.ca (S.T. Johnson), mundt@ualberta.ca (C. Mundt), dianne.bray@stalbertsturgeonpcn.com (D. Bray), lmtaylor@ualberta.ca (L. Taylor), deurich@ualberta.ca (D.T. Eurich), jeff.johnson@ualberta.ca (J.A. Johnson).

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1. Introduction

Diabetes mellitus is a chronic health condition characterized by hyperglycemia, and is associated with increased morbidity and early mortality [1]. Non-diabetic hyperglycemia that does not satisfy the diagnostic criteria for diabetes mellitus is generally known as pre-diabetes, and if left untreated, approximately 25% of individuals with pre-diabetes will progress to diabetes in 3–4 years [2]. By 2030, the number of persons with pre-diabetes is expected to reach 472 million, a number exceeding that projected for diabetes [3].

In an attempt to combat this growing disease burden, many studies have been conducted demonstrating the efficacy of primary prevention strategies in type 2 diabetes. The Finnish diabetes prevention study (DPS) showed a 58% relative risk reduction in diabetes for those who received individualized advice and behavioural support compared to those who only received general health advice [4], while the Diabetes Prevention Programme (DPP) also demonstrated a 58% reduction in incident diabetes with intensive diet and exercise compared to placebo [5]. Indeed, a recent systematic review of randomized controlled trials evaluating lifestyle interventions to prevent or delay type 2 diabetes in people with impaired glucose tolerance found that lifestyle interventions reduced the rate of progression to type 2 diabetes by 50% compared to standard advice alone (pooled hazard ratio 0.51, 95% CI, 0.44–0.60) [6].

Given evidence suggesting lifestyle interventions targeting diet and physical activity are effective in the prevention of diabetes, the DE-PLAN initiative (diabetes in Europe – prevention using lifestyle, physical activity and nutritional intervention) [7] and the National Institute for Health and Care Excellence (NICE) guidelines for preventing type 2 diabetes [8] were established in order to give health practitioners and other important stakeholders guidance around the management of type 2 diabetes prevention.

Questions remain, however, around the around the feasibility of high resource interventions to prevent diabetes within a healthcare setting. Given the success of studies such as the DPP and the DPS, several studies have effectively translated the methods of these large interventions to low-cost, community-based programmes including the Finnish national diabetes prevention programme (FIN-D2D) [9] as well as the healthy-living partnerships to prevent diabetes (HELP PD) and the diabetes education & prevention with a lifestyle intervention (DEPLOY) [10–12]. In spite of the success of these community based programmes, the minimum intensity of community-based lifestyle interventions to produce behavioural change is still not known. Thus, the objective of our study was to describe the results of a single 3h pre-diabetes patient education programme provided by the St. Albert and Sturgeon Primary Care Network in Alberta, Canada.

2. Methods

2.1. Setting and population

The 3-h dietitian led pre-diabetes education session took place at the St. Albert and Sturgeon Primary Care Network (PCN) which serves a geographic area north of Edmonton, Alberta,

Canada, including St. Albert, Alcomdale, Bon Accord, Calahoo, Lancaster Park, Legal, Morinville, Namao, Riviere Qui Barre and Sturgeon County. A PCN is a group of family physicians and other health care professionals (including nurses, pharmacists, and physical therapists) that provide enhanced primary patient care by taking a comprehensive approach to management, health promotion and coordination of patients with medically complex problems. PCNs tend to focus on many issues related to primary care, particularly chronic disease prevention and management.

2.2. Education session

This session was developed in partnership with Alberta Health Services with the goal of preventing or delaying type 2 diabetes in pre-diabetic patients through targeting a 5–10% reduction in body weight by limiting dietary fat and increasing dietary fibre consumption, as well as increasing physical activity levels to 30 min, 5 times per week. These targets were specifically selected as they reflect current research and clinical practice guidelines [1] in the area of diabetes prevention. Content of the session was developed around reaching these targets and included an overview of pre-diabetes and how it differs from type 2 diabetes, as well as discussion and activities teaching new skills on how to reach these goals (e.g., how to identify food products higher in fibre). A food-guide based prescription was included as a means to achieve a balanced diet and was reinforced using Canada's Food Guide [13], as well as discussions around portion sizes, timing of meals and snacks and ideas on how to cut out food and drink high in sugar. Sample meal plans and healthy snack examples were also provided. In order to promote positive behavioural change, the education session was guided by social cognitive theory [14] and included strategies such as persuasive messages and modelling. Examples of these strategies from the education session included class discussion of common barriers to healthy eating (e.g., lack of motivation, big appetite, less enjoyable foods) as well as implementation intention in the physical activity overview. Participants were also encouraged to measure and monitor their waist circumference and body weight as well as to monitor other health indicators such as glycaemic control, blood pressure and cholesterol levels.

Participants were eligible to take part in the education session and study beginning in January 2010, with the session still offered currently (although information on participants are not being collected). Eligible participants were identified as those invited to attend the pre-diabetes lifestyle education class who were recruited by mail through a PCN patient registry, and those who were recruited when they arrived at the class. Diagnosis of pre-diabetes was self-reported, however, in order to attend the education session the individual had to be under the care of a PCN physician who had previously identified participants as having pre-diabetes. All recruited participants were asked to complete a baseline questionnaire, which included questions from previously validated tools [15–17] (see Appendix), prior to completing the pre-diabetes education session. The same questionnaire was administered at 3 and 6 months after the baseline questionnaire to assess any dietary, physical activity and weight related behavioural changes assumed to be the result of the education session.

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