Original Research

Evaluating the Impact of Diabetes Self-Management Education Methods on Knowledge, Attitudes and Behaviours of Adult Patients With Type 2 Diabetes Mellitus

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Key Messages

- Diabetes education using conversation maps improves knowledge and attitude and encourages behaviour change.
- Glycated hemoglobin levels decrease with better diabetes knowledge and improved attitude of patients.
- Patients with diabetes feel empowered and socially supported by conversations with other patients.

ARTICLE INFO

ABSTRACT

Objectives: Diabetes self-management refers to all activities patients undertake to care for their illness, promote health and prevent the long- and short-term effects of diabetes. This study compared the effectiveness of 2 diabetes self-management education methods by examining changes in glycated hemoglobin (A1C) levels and knowledge, attitudes and behaviours (KABs) after traditional group education (TE) or with diabetes conversation maps (CMs). The CMs group was postulated to show greater decrease in A1C levels and improved KABs scores compared to the TE group.
Methods: A sample of 21 eligible clients from Diabetes Care Guelph were randomly assigned into 2 groups, 10 receiving education through CMs and 11 through TE. Changes in knowledge and attitude were determined by using questionnaires and repeated-measures pretest and post-test design before and after the education sessions. Changes in A1C levels were determined by comparing values at baseline and at 3 months after receiving diabetes education. Two focus groups were conducted to obtain participants' perceptions of the education methods and self-reported KABs changes.
Results: Significant differences in knowledge and attitude score changes were observed from baseline/initial education and after 3 months. Both groups had significant decreases in A1C levels from baseline to 3 months afterward. Focus groups revealed themes common to both groups, such as benefits of early education, need for multiple lifestyle behaviour changes and feelings of social support.
Conclusions: CMs had significant impact and are effective for group education. The changes observed may lead to improved diabetes self-management, thus reducing costly health complications related to poorly controlled diabetes.

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RÉSUMÉ

Objectifs : La prise en charge autonome du diabète concerne toutes les actions que les patients entreprennent pour prendre soin de leur maladie, préserver la santé et prévenir les conséquences du diabète à court et à long terme. C'est par l'étude des changements dans les concentrations de l'hémoglobine glyquée (A1c) et dans les connaissances, les attitudes et les comportements (CAC) après l'éducation traditionnelle en groupe (ÉT) ou à l'aide des outils Conversation Map^MC d'éducation au diabète (CM) que nous avons pu comparer l'efficacité des 2 méthodes d'éducation à la prise en charge autonome du diabète. Nous avons présumé que le groupe CM montrait une plus grande diminution des concentrations de l'A1c et une amélioration des scores CAC par rapport au groupe ÉT.

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Méthodes : Nous avons réparti de manière aléatoire en 2 groupes un échantillon de 21 clients admissibles de la clinique Diabetes Care Guelph, soit 10 qui bénéficiaient des CM et 11 qui recevaient une ÉT. Nous avons déterminé les changements dans les connaissances et les attitudes au moyen de questionnaires et de plans expérimentaux prétest et post-test à mesures répétées avant et après les séances d'éducation. Nous avons déterminé les changements dans les concentrations de l'A1c en comparant les valeurs du début et les valeurs 3 mois après avoir reçu une éducation au diabète. Nous avons mené 2 groupes de discussion pour obtenir les perceptions des participants à l'égard des méthodes d'éducation et des changements auto-rapportés dans les CAC.

Résultats : Nous avons observé des différences importantes de changements dans les scores sur les connaissances et les attitudes entre le début de l'éducation et après 3 mois. Les deux groupes ont montré des diminutions importantes dans les concentrations de l'A1c entre le début et 3 mois plus tard. Les groupes de discussion ont mis en évidence des points communs aux deux groupes tels que les avantages de l'éducation précoce, la nécessité de changer de nombreux comportements liés au mode de vie et les impressions sur l'accompagnement social.

Conclusions : Les CM ont eu des répercussions importantes et se sont révélés efficaces pour l'éducation en groupe. Les changements observés peuvent entraîner l'amélioration de la prise en charge autonome du diabète, par conséquent la réduction des coûts des complications de santé liées à la mauvaise régulation du diabète.

Introduction

The prevalence of diabetes is increasing; there has been an estimated 69% increase in the number of adults with diabetes in developing countries and a 20% increase in developed countries between 2010 and 2030 (1). The Public Health Agency of Canada reported that approximately 2.4 million (6.8%) Canadians 1 year of age or older were living with diagnosed diabetes in 2008/2009, with an estimated additional 450,000 having undiagnosed diabetes then. Projections indicate that by 2018/2019, an estimated 3.7 Canadians will be living with diabetes (2). Type 2 diabetes mellitus composes 75% to 90% of diagnosed cases, and for the past 2 decades has been on the rise, especially among youth worldwide (1,2). Based on random electronic medical record data mining conducted by the Guelph Family Health Team in 2011, the area's population with diabetes was estimated to be about 7%. In 2011, Diabetes Care Guelph enrolled 1,781 patients into the diabetes education program, and patient enrolment for succeeding years is estimated to increase.

Diabetes self-management has been recommended to guide people in making appropriate choices (3–4). It includes knowledge, skills, ability and confidence in making daily decisions, selecting and making positive behaviour changes and coping with the emotional aspects of their disease within the contexts of their lives (5). Self-management is the primary goal of diabetes intervention because the costs and complications associated with management are largely preventable when glycemic control is attained by maintaining glycated hemoglobin (A1C) levels at lower than 7% (3–4). People who have diabetes provide at least 99% of their own care through self-management (6).

Diabetes self-management education (DSME) has been considered a cornerstone of diabetes clinical management since the 1930s (7). The *Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* emphasize that DSME, incorporating knowledge and skills development as well as cognitive-behavioural interventions, should be implemented for individuals with diabetes (3–4). Patients' knowledge, attitudes and behaviours (KABs) are influenced by factors, such as age, gender, schooling, marital status, occupation, diagnosis and treatment, and knowledge itself does not always lead to changes in attitudes (8–9). The same KAB parameters are potentially influenced by the delivery of education and ultimately affect clinical outcomes, such as glycemic control (10). Other studies show the impact of education and psychological interventions on psychosocial outcomes, such as depression, diabetes-related distress/anxiety and quality of life (9,11,12).

Educational techniques have shifted from didactic presentations focusing on acquisition of knowledge and information to interventions involving patients' collaboration, empowerment and interaction (13). Diabetes Care Guelph transitioned from traditional education (TE) to using Canadian conversation maps (CMs) for the education of persons with type 2 diabetes mellitus following staff training in the use of CMs. Prior to this transition, TE was the only method used; it consisted of 2 1-hour and 45-minute PowerPoint lectures presented by a registered dietitian (RD) and a registered nurse (RN) and included the appropriate self-management topics required in diabetes education. The sessions were designed to provide information and acquire knowledge, but the attitudes and behaviours were not addressed.

CMs are a series of images and symbols of topics appropriate for DSME as a tool to engage people in conversations about clinical, behavioural and psychosocial issues that will facilitate learning within group settings (3). Currently, there is limited published research in Canada (14–15) or in other countries that compares the impact of various DSME methods (16–18), particularly using CMs to improve KABs (19–20). Recent systematic reviews and studies of education programs showed such outcomes as better glycemic control (13–14,21,22), improved dietary/exercise habits and other behaviours (13,16). Other studies indicated increased knowledge (13,16,22) and that group sessions are better than individual sessions for reducing A1C levels (23).

As health-care budgets become tighter, evaluating the performance and effectiveness of differing education methods is necessary to determine best-practice approaches (24). Therefore, this research examined the impact of CMs compared to TE by assessing changes in patients' A1C levels and KABs related to blood glucose monitoring, lifestyle and medication management, nutrition and physical activity. It is postulated that patients who receive education through CMs would show greater decreases in A1C concentrations, better knowledge, improved attitudes and behaviours and positive perceptions of the education 3 months after the intervention compared to those who received TE.

Methods

Governing institutional review boards approved the study protocol. This research used mixed methods (pretest/post-test design, focus groups) to compare the impact on patients' A1C levels and KABs related to diabetes of 2 DSME interventions that were similar in content but different in delivery methods. The study also assessed patients' perceptions of the delivery methods through focus groups.