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Original Research

Beating Diabetes Together: A Mixed-Methods Analysis of a Feasibility Study of Intensive Lifestyle Intervention for Youth with Type 2 Diabetes

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ABSTRACT

Objectives: The purpose of this study was to assess the feasibility and lived experiences of an intensive group-based lifestyle intervention for youth with type 2 diabetes (Beating Diabetes Together) (BDT).
Methods: The study included 12 Indigenous youth with type 2 diabetes (mean age, 14 years; n=9 girls); they participated in a 16-week pilot study of an intensive, group-based lifestyle intervention. We conducted a mixed-methods investigation of the cardiometabolic responses and lived experiences in the intervention. Of the 12 youth with cardiometabolic risk data, 5 youth and 2 mothers participated in semistructured interviews. Interview participants were purposely selected based on the frequency of attendance and availability.
Results: The intervention was well attended (>75% retention), and youth perceived significant benefits from participation. Thematic analysis of the interviews revealed 3 major themes. First, youth and parents described living with type 2 diabetes as being emotionally challenging. They described this experience as being isolating and connected to feelings of guilt and defeat. Second, youth and parents discussed benefits of participating in BDT. They shared the significance of positive relationships and experiences and how those have helped to manage their illness. Third, youth described the aspects that they most enjoyed at BDT. Peer support was an important determinant of physical activity, but they considered dietary changes to be individual behaviours. Glycemic control, blood pressure and anthropometric measures were not different following the intervention.
Conclusions: Our findings support the importance of maintaining an inclusive environment and relationship building when designing strategies to promote behaviour modification for Indigenous youth living with type 2 diabetes.

Mots clés :
modification du comportement
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RÉSUMÉ

Objectifs : L'objectif de cette étude était d'évaluer la faisabilité et les expériences vécues au cours d'une intervention intensive de groupe sur le mode de vie des jeunes souffrant du diabète de type 2 (Beating Diabetes Together [BDT]).
Méthodes : L'étude comptait 12 jeunes autochtones souffrant du diabète de type 2 (âge moyen, 14 ans; n=9 filles) qui ont participé à une étude pilote de 16 semaines portant sur une intervention intensive de groupe sur le mode de vie. Nous avons mené une recherche par les méthodes mixtes sur les réponses

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cardiométaboliques et les expériences vécues au cours de l'intervention. Parmi les 12 jeunes ayant des données de risque cardiométabolique, 5 jeunes et 2 mères ont participé à des entrevues semi-structurées. Les participants aux entrevues ont été intentionnellement sélectionnés selon la fréquence de leur participation et leur disponibilité.
Résultats : L'intervention qui a suscité une grande participation (rétention>75%) a laissé percevoir aux jeunes des avantages importants. L'analyse thématique des entrevues a révélé 3 principaux thèmes. Premièrement, les jeunes et les parents ont décrit vivre difficilement le diabète de type 2 sur le plan émotionnel. Ils ont décrit aussi cette expérience comme étant une expérience qui les isole et leur fait éprouver des sentiments de culpabilité et d'échec. Deuxièmement, les jeunes et les parents ont discuté des avantages de la participation à la BDT. Ils ont partagé sur l'importance des relations et des expériences positives et de la manière dont celles-ci les ont aidés à prendre en charge leur maladie. Troisièmement, les jeunes ont décrit les aspects les plus agréables de la BDT. Le soutien des pairs a été un déterminant important de l'activité physique, cependant ils ont considéré les changements alimentaires comme étant liés aux comportements individuels. La maîtrise de la glycémie, la pression artérielle et les mesures anthropométriques n'ont pas pas différentes à la suite de l'intervention.
Conclusions : Nos résultats soutiennent l'importance du maintien d'un environnement inclusif et de l'établissement de relations lors de l'élaboration de stratégies pour promouvoir la modification du comportement des jeunes autochtones vivant avec le diabète de type 2.

Introduction

The number of youth with type 2 diabetes have increased in Canada (1) and the United States (2) over the past 2 decades. Canadian (3) and American (4) clinical practice guidelines call for intensive lifestyle changes as cornerstones in the management of glycemic control and cardiometabolic risk in youth with type 2 diabetes. Studies of adults with type 2 diabetes reveal that intensive lifestyle interventions that increase physical activity and result in weight loss significantly improve glycemic control and reduce cardiometabolic risk factors in the short term (5–7). Fewer data exist for children with type 2 diabetes; however, experimental studies suggest that the cardiometabolic risk reduction following intensive lifestyle therapy is attenuated and is not sustainable (4,8–10).

Retrospective analyses of patient charts by our group (11) and others (12,13) suggest that improvements in glycemic control with conventional intensive lifestyle education are evident in a small segment of the population of youth with type 2 diabetes (<25%) and that effects are modest, at best. To our knowledge, only 2 experimental trials have examined the efficacy of intensive lifestyle therapy prospectively (14,15). They revealed that intensive lifestyle interventions do not prevent the progressive loss of glycemic control experienced by most youth following diagnosis of type 2 diabetes, nor did they improve cardiometabolic risk factors (14,15). These 2 interventions were limited by the failure to test the effects of intensive lifestyle therapy alone (i.e. monotherapy), involve nonpractical interventions (i.e. very low calorie ketogenic diet delivered in a hospital setting) (8) and/or failed to assess the lived experience of those participating in the intervention by using qualitative methods. The purpose of this mixed-methods pilot study was to overcome these limitations and assess the effects of a novel, intensive, community group-based peer lifestyle intervention for youth with type 2 diabetes.

Methods

Quantitative elements

Design

We originally attempted a randomized controlled pilot trial of the intensive lifestyle intervention described below; however, because of logistical issues and the requests by parents for access to the intervention, we performed a quasi-experimental prepost design. The study was registered at clinical clinicaltrials.gov in 2012 (Identifier: NCT01597154). The study was approved by the Biomedical Research Ethics Board in the Faculty of Health Sciences at the University of Manitoba, in accordance with the Declaration of Helsinki.

Population

Adolescents with type 2 diabetes were recruited from the Diabetes Education Resource for Children and Adolescents in the Children's Hospital of Manitoba (1). Adolescents 13 to 18 years of age with body mass indices (BMIs) considered to be overweight according to the standards of the International Obesity Task Force (16). Those with type 2 diabetes were classified according to clinical characteristics (17), and the absence of diabetes-associated autoantibodies, in accordance with Canadian Diabetes Association guidelines (3). Family members closely involved in the children's clinical management were included in this intervention. Adolescents were excluded if they met any of the following exclusion criteria: 1) had been admitted for diabetic ketoacidosis in the previous 6 months; 2) were currently being treated with corticosteroids or atypical antipsychotics, because these agents significantly influence carbohydrate metabolism (18,19); 3) had had an orthopedic injury or chronic illness that would prevent them from performing the intervention; 4) had experienced weight loss or had enrolled in weight-loss programs within 6 months of enrolment; 5) had histories of alcoholism or drug abuse.

Intervention

The intervention consisted of 16 weeks of peer-based support (Beating Diabetes Together) (BDT) for achieving the following lifestyle goals: 1) a 7% to 10% reduction in body weight; 2) 200 minutes of moderate to vigorous physical activity weekly; 3) reduced sugar-sweetened beverage intake; and 4) increased fruit and vegetable intake.

These goals were based on the targets established for the lifestyle arm of the TODAY trial (20). The delivery model was based on conventional behaviour-modification techniques, motivational interviewing (21,22) and peer mentoring (21,23) because these approaches have proven to be successful in achieving behaviour change by adolescents. We followed an established curriculum, called Bright Bodies (24), for achieving weight loss, physical activity and impulse control that has proven to elicit meaningful (25) and sustained (26) weight loss in overweight youth. This curriculum included exercise, nutrition education and behaviour modification.

The program was delivered in a community setting during after-school hours twice weekly for 16 weeks. The program curriculum