ORIGINAL RESEARCH

Development and Pilot-Testing of a Brief Psychosocial Group Intervention Protocol for Type 2 Diabetes Self-Management

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ABSTRACT

OBJECTIVES: To develop a brief psychosocial intervention protocol for type 2 diabetes self-management and pilot-test its implementation.

METHODS: A 6-session evidence-based psychosocial intervention protocol was developed focusing on the role of behaviour modification, maintenance of motivation and emotion management in type 2 diabetes self-management. The intervention was pilot-tested with 15 individuals with type 2 diabetes recruited from participants in the Action to Control Cardiovascular Risk in Diabetes (ACCORD) study.

RESULTS: Repeated-measures analyses of variance of validated psychosocial and behavioural outcome measures revealed that following the intervention, diabetes-related distress and intake of high-fat foods decreased and exercise participation increased. Furthermore, all participants found the intervention to be helpful for diabetes management. The most helpful aspect of the group sessions, derived from inductive classical content analysis of open-ended feedback questionnaires, was the development of friendship and trust in openly sharing experiences with group members.

CONCLUSION: This promising intervention should be further tested using a randomized, controlled trial. The protocol could then be developed as a training manual so that other university-educated professionals could deliver the intervention to people with diabetes, helping to fulfill 1 of the Canadian Diabetes Association's clinical guidelines: providing psychosocial interventions as part of diabetes care.

KEYWORDS: brief intervention, group intervention, knowledge translation, psychosocial, self-management, type 2 diabetes

RÉSUMÉ

OBJECTIF : Élaborer un protocole d'intervention psychologique de courte durée sur l'autogestion du diabète de type 2 et mener une étude pilote sur sa mise en œuvre.

MÉTHODES : On a élaboré un protocole d'intervention psychologique sur l'autogestion du diabète de type 2 fondé sur des données probantes et comportant six séances. Ce protocole est axé sur le rôle de la modification du comportement, du maintien de la motivation et de la gestion des émotions. On a ensuite mené une étude pilote sur la mise en œuvre de l'intervention auprès de 15 personnes atteintes de diabète de type 2 qui avaient participé à l'étude ACCORD (*Action to Control Cardiovascular Risk in Diabetes*).

RÉSULTATS : Des analyses de variance sur plusieurs mesures de critères validés d'évaluation des effets psychosociaux et comportementaux ont révélé qu'après l'intervention, il y avait une réduction de la détresse liée au diabète et de la consommation d'aliments riches en graisses et une augmentation de l'activité physique. De plus, tous les participants ont trouvé l'intervention utile pour la gestion du diabète. L'aspect le plus utile des séances de groupe, selon l'analyse inductive classique de questionnaires à réponses libres, a été la création de liens d'amitié et la possibilité de partager en toute confiance les expériences avec les membres du groupe.

CONCLUSION : Cette intervention prometteuse devrait faire l'objet d'un essai contrôlé et randomisé. Le protocole pourrait ensuite former la base d'un manuel de formation pour que d'autres professionnels ayant un diplôme universitaire puissent utiliser l'intervention auprès de personnes diabétiques, conformément à une des lignes directrices cliniques de l'Association canadienne du diabète : intégrer des interventions psychologiques aux soins du diabète.

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INTRODUCTION

Self-management training has played an important role in diabetes care since the 1930s (1). Despite the emphasis on self-management in clinical care, adherence to optimal diabetes self-care behaviours remains low. It has been estimated that between 67% and 93% of individuals with type 2 diabetes fail to follow established guidelines for optimal management (2,3). Unfortunately, knowledge of proper diabetes self-care is insufficient for effective management and unrelated to adherence (4).

Researchers and practitioners have become increasingly aware of the important role of psychological and social factors in diabetes self-management (5-7). It is widely recognized that emotional difficulties such as anxiety and depression compromise optimal self-management behaviours (8-10). Even for those who do not experience elevated levels of anxiety and depression, distress over diabetes management is associated with poorer glycemic control (11). In fact, diabetes-specific distress has been shown to compromise glycemic control even after accounting for general emotional distress (11). On the other hand, research has shown that positive changes in diabetes-specific perceptions are associated with increased commitment to diabetes management (12). It is believed that people with diabetes who perceive themselves to be high-functioning from a psychosocial standpoint (e.g. good mental health) may be more motivated to keep up the gruelling and long-term tasks of diabetes management (12).

In light of the important role psychosocial factors play in diabetes self-management, there has been increased awareness of the need to incorporate them into interventions and outcome measures when working with individuals with diabetes (5,6,12). In fact, the 2008 Canadian Diabetes Association (CDA) clinical practice guidelines (13) state that psychosocial factors impact nearly all areas of diabetes self-management. Further, the guidelines recommend that preventive interventions such as psychosocial support be incorporated into primary care.

Recent studies have evaluated self-management interventions that incorporate a psychosocial component (e.g. effective goal setting, assessment of self-efficacy) and have shown promising results (14,15). However, according to a recent Cochrane review (2), only a small number of studies have specifically looked at psychosocial outcomes, and thus more research is required to confirm these results. Furthermore, despite increased recognition of the importance and potential benefits of psychosocial interventions, access to these types of interventions remains an issue (5). Thus, in order to increase access to psychosocial interventions, should psychosocial management be incorporated into diabetes management, should mental health providers be added to the staff of diabetes centres, or should mental health clinics offer services specifically to those with diabetes?

Given the recommendations in the CDA guidelines (13) (which emphasize the role of psychosocial monitoring and support) and evidence suggesting a lack of access to these types of interventions, the main goal of the current study was to develop a brief psychosocial intervention for type 2 diabetes self-management. A theory-driven/evidence-based 6-session psychosocial group intervention protocol was developed by a team of psychologists and psychology graduate students. The intervention's contents were developed using a cognitive behavioural framework (16), the transtheoretical model of change (17,18) and principles of motivational interviewing (19), and incorporated a focus on the role of behaviour modification, maintenance of motivation and emotion management in type 2 diabetes self-management. The intent was to develop a protocol that could be implemented by diabetes professionals with minimal support from psychological services. In this way, the reach of the intervention could be maximized.

An additional goal of the current study was to pilot test the implementation of this brief intervention. Outcome measures collected during pilot testing included validated psychosocial and behavioural measures, in order to assess the impact of the intervention on psychosocial functioning and diabetes-specific self-care behaviours, as well as open-ended questionnaires to assess participants' qualitative experiences.

METHODS
Participants
A convenience sample consisting of individuals with type 2 diabetes who were involved in the Action to Control Cardiovascular Risks in Diabetes (ACCORD) study (20) in Halifax, Nova Scotia, Canada, was recruited for the current study. One of the goals of the ACCORD randomized clinical trial was to evaluate whether a therapeutic strategy targeting a glycated hemoglobin (A1C) level of <6.0%, using a treat-to-target approach, would reduce the rate of cardiovascular disease. ACCORD participants were randomized to either attempt to achieve these lower levels or attempt to maintain A1C levels between 7.0% and 7.9%. ACCORD participants were specifically recruited for the current study because they had already received intensive personalized clinical attention for several years as part of the study protocol (the ACCORD study was nearing completion at the time of the current study) and had been given a number of tools (e.g. glucose-lowering medication and diet and lifestyle counselling) to achieve their goals. However, because the goals of the ACCORD trial were ambitious, it was expected that psychosocial factors might be particularly relevant for

this group. As well, given the long-standing relationships between these individuals and the diabetes research staff, any benefit from general social support would have been accomplished already. As such, any outstanding psychosocial issues would not likely have been responsive to general social support.

Inclusion and exclusion criteria for the ACCORD study are described elsewhere (20,21). In Nova Scotia, 81 ACCORD study participants were recruited for the current study. Of these, 16 participants attended at least 1 of the 6 group sessions. Participants in the current study were from both arms of the ACCORD study and had been part of the study for 3 to 5 years. One participant who completed the questionnaires incorrectly was excluded from analyses. Thus, 12 men and 3 women, with an age range of 59 to 78 years and a mean (SD) age of 66 (6.2) years, were included in the current study. Forty-six percent had community college or higher education, all but 1 (a widower) were married and all but 1 self-identified as white. Two participants dropped out of the study after the first session: 1 cited the high cost of travelling to sessions and parking as her reason for not continuing, and the other cited that he saw few benefits to attending the group. Of the remaining participants, 6 attended all 6 sessions, 3 attended 5 sessions, and 4 attended 4 sessions.

Procedure

The intervention consisted of 6 sessions, each lasting 2 hours. Each group consisted of 3 to 8 participants and 2 facilitators, who were clinical psychology doctoral students or post-doctoral fellows, working under the supervision of a registered health psychologist with expertise in diabetes. Sessions were interactive and patient-centred and consisted of both educational and problem-solving components. Each session dealt with a psychosocial topic relevant to diabetes self-management, with each week building on what had been discussed the previous week. A brief 2-page handout consisting of relevant information and written exercises was provided at each session. Participants completed all outcome measures at the beginning of the first session (pre), at the end of the last session (post) and 3 months after the last session (follow-up).

Intervention content

Session 1 began with group introductions, an explanation of the intervention structure and a few basic rules (e.g. confidentiality, respect). This session focused on setting and managing behavioural goals using goal-setting principles such as SMART (i.e. specific, measurable, achievable, relevant, timely) and building flexibility into the process. The importance of monitoring and rewarding behaviours over outcomes was also highlighted.

Session 2 focused on maintaining motivation in diabetes self-care. Participants learned the difference between short-term motivation (e.g. negative emotions) and long-term motivation (e.g. positive emotions, self-identity). They completed a decisional balance for a desired diabetes self-care behaviour (e.g. a specific exercise or eating goal) and identified and problem-solved potential barriers to self-care behaviours.

Session 3 focused on stress management in diabetes self-care. Participants learned the difference between stressors as situations and stress as individual responses. They also learned about the physiological effects of stress, and the ways stress impacts a person's ability to engage in proper diabetes self-care. They learned the difference between self-focused and problem-focused stress-management strategies. Finally, participants were encouraged to develop a plan to manage stressful situations in their own lives.

Session 4 focused on emotion management in the face of ongoing diabetes care. First, the group discussed how difficulties managing emotions can affect adherence to treatment demands (e.g. decreases motivation to exercise, eat healthfully). The cognitive behavioural model was introduced, including some distorted or unhelpful thinking styles, and how these relate to emotions and behaviours. Finally, participants practiced identifying and challenging distorted or unhelpful thinking.

Session 5 focused on overcoming emotional eating. First, emotional eating was normalized, and the reinforcements certain foods provide (e.g. distraction; release of reward-related chemicals, such as dopamine) were explained. Next, participants were encouraged to identify their own triggers (e.g. boredom, sadness, anxiety) and problem-solve alternatives to emotional eating.

Session 6 consisted of a review of material covered over the previous 5 sessions and a discussion about long-term strategies for successful diabetes care. Participants were encouraged to develop strategies for staying on course and remaining accountable after group termination. A more detailed description of the sessions' contents can be obtained from the authors upon request.

Measures

The Diabetes Distress Scale (DDS) (22) is a 17-item self-report scale that assesses diabetes-related emotional distress. The DDS is divided into 4 subscales: emotional burden (e.g. "feeling overwhelmed by the demands of living with diabetes"); physician-related distress (e.g. "feeling that my doctor doesn't take my concerns seriously enough"); regimen-related distress (e.g. "feeling that I am often failing with my diabetes regimen"); and diabetes-related interpersonal distress ("feeling that my friends/family don't appreciate how difficult living with diabetes can be"). Each item is rated on

a Likert scale, with values ranging from 1 (no problem) to 6 (serious problem). The range of possible values for each subscale was 5 to 30 for emotional burden, 4 to 24 for physician-related distress, 5 to 30 for regimen-related distress and 3 to 18 for diabetes-related interpersonal distress. The DDS has been used in both research and clinical practice (23). It has been shown to have high internal consistency, with a Chronbach's alpha of 0.93 (22), and good concurrent validity, showing positive correlations with depressive symptomatology, poorer adherence to meal planning recommendations and lower levels of exercise (22).

The Center for Epidemiologic Studies Depression (CES-D) Scale (24) is a widely used 20-item self-report scale designed to measure depressive symptomatology over the preceding week in the general population. Items are rated on a Likert scale ranging from 0 (rarely or none of the time; less than 1 day) to 3 (most or all of the time; 5 to 7 days). Scores range from 0 to 60, with higher scores indicating higher levels of depressive symptoms. Scores above 16 have been found to differentiate between depressed and non-depressed individuals in a community sample (25). The CES-D scale has been found to have very high internal consistency and good validity as demonstrated by significant correlations with clinical ratings of depression (24).

The Satisfaction with Life Scale (SWLS) (26) is a 5-item self-report questionnaire developed to measure global life satisfaction. Participants are asked to rate items (e.g. in most ways, my life is close to my ideal) on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The SWLS was shown to have favourable psychometric properties, including high internal consistency and high temporal reliability. Further, scores on the SWLS correlate moderately to highly with other measures of subjective well-being (26).

The Summary of Diabetes Self-Care Activities (SDSCA) scale (27) is a brief self-report questionnaire that assesses adherence to the following areas of diabetes self-care: diet, exercise, blood-glucose testing, foot care and smoking. The SDSCA has been shown to be internally consistent and correlate positively with other measures specifically assessing particular areas of self-care, demonstrating good concurrent validity (27).

Finally, at the end of the last session, participants completed a feedback questionnaire consisting of 4 open-ended questions that inquired about their subjective experiences of the intervention. Questions were 1) What did you find most helpful about attending the group? 2) What did you find least helpful about attending the group? 3) What changes would you suggest for future groups? 4) Did the group help you in your diabetes management? If yes, please explain how. If not, was there anything that you felt might have helped you, but that was not addressed in the group?

Using SPSS 15.0 (SPSS Inc., Chicago, Illinois), a series of repeated-measures analyses of variance were performed on the validated psychosocial and behavioural outcome measures to assess changes in outcome measures between pre, post and follow-up. Although the small convenience sample of this study resulted in low power to detect significant differences, a few important significant and marginally significant outcomes were found. These were followed up with planned pre/post and pre/follow-up comparisons. Effect sizes are reported as partial eta^2 (η_p^2), which describes the proportion of total variance that is accounted for by the effect in question. Intent-to-treat analyses were conducted using a conservative last-value carried-forward method for replacing missing values from the 2 participants who did not complete the post and follow-up measures.

Ethical review

The current study was approved by the Capital Health Authority research ethics board in Halifax, Nova Scotia, Canada.

RESULTS

Psychosocial outcomes

Table 1 shows results for psychosocial outcome measures in the current study. Results reveal an overall effect of time for the emotional burden subscale of the DDS (F[2,28]=4.43, p=0.021, η_p^2=0.24). However, none of the planned comparisons (i.e. pre/post and pre/follow-up) were significant. For the regimen-related distress subscale of the DDS, the assumption of sphericity was violated ($\varkappa^2$[2]=6.75, p=0.034); therefore, multivariate tests are reported (28). There was a

Table 1. Psychosocial outcome measures			
Psychosocial scale	*Pre*	*Post*	*Follow-up*
Diabetes Distress Scale			
Emotional burden	9.53 (3.76)	11.73 (5.67)	8.73 (3.41)
Physician-related distress	5.69 (3.26)	7.42 (3.21)	6.17 (2.82)
Regimen-related distress	10.87 (4.34)*	10.88 (4.91)	9.02 (2.99)*
Diabetes-related interpersonal distress	6.33 (3.35)	6.85 (4.39)	5.33 (2.53)
Center for Epidemiologic Studies Depression Scale	11.72 (7.30)	9.80 (7.37)	9.96 (9.71)
Satisfaction with Life Scale	24.36 (8.06)	25.43 (7.29)	26.29 (7.88)

Data are mean (SD)
*Significantly different at p<0.05

marginally significant effect of time (F[2,13]=3.64, p=0.056, η_p^2=0.36). Follow-up analyses reveal there was no difference between pre and post (F<1), but participants reported a significant decrease in regimen-related distress between the pre and follow-up assessments (F[1,14]=6.78, p=0.02, η_p^2=0.33). There were no significant differences in the physician-related distress subscale (F[2,28]=2.09, p>0.05, η_p^2=0.13) or diabetes-related interpersonal distress subscale (F[2,28]=2.21, p>0.05, η_p^2=0.14). No significant differences were found for the CES-D (F[2,28]=1.07, p>0.05, η_p^2=0.07) or SWLS (F[2,28] <1).

Behavioural outcomes

Even before beginning the group sessions, participants reported high adherence rates to behaviours other than those involving diet and exercise. They reported testing their blood glucose an average of 6.85 of the preceding 7 days and engaging in foot care an average of 6.20 of the preceding 7 days. Also, all participants reported taking their recommended diabetes medication on all of the preceding 7 days. All but 2 participants had not smoked a cigarette in at least 2 years. One smoked an average of 1 cigarette per day, and the other an average of 37 cigarettes per day. Neither participant changed his/her smoking behaviour following the intervention. Because participants were highly adherent to self-care behaviours other than diet and exercise before beginning the intervention, and because diet and exercise are the most difficult to adhere to (3), only these factors were analyzed in the current study. Results are shown in Table 2.

There was a marginally significant effect of time for avoidance of high fat foods (F[2,26]=2.72, p=0.084, η_p^2=0.17). Follow-up analyses revealed that participants decreased intake of high-fat foods between pre and post (F[1,13]=7.83, p=0.015, η_p^2=0.38). However, this change was not fully sustained at follow-up as demonstrated by a nonsignificant increase in avoidance from pre to follow-up (F[1,13]=1.78, p>0.05, η_p^2=0.12). Participants also increased the number of days that they participated in specific exercise sessions, over and above household chores or work activities over the preceding week. As the assumption of sphericity was violated ($\varkappa^2$[2]=8.23, p=0.016), multivariate tests are reported (28), revealing an overall marginally significant effect of time (F[2,13]=3.78, p=0.051, η_p^2=0.37). Participants increased exercise between pre and post (F[1,14]=6.79, p=0.021, η_p^2=0.33). Again, however, this increase was not fully sustained at follow-up, as demonstrated by a nonsignificant increase from pre to follow-up (F[1,14]<1, p>0.05). No other item on the DSC indicating adherence to diet and exercise changed significantly.

In addition to the quantitative measures, feedback from the 12 participants who completed the 4-item open-ended questionnaire was very positive. All participants expressed that the group sessions were helpful for their diabetes self-management. Responses to Question 1 and the first part of Question 4 were combined to determine helpful or positive aspects of the group sessions. Similarly, responses to Questions 2 and 3, as well as the latter part of Question 4, were combined to determine aspects of the group sessions participants found least helpful or would change.

Responses were coded using an inductive (i.e. codes emerging from the data) classical content analysis (i.e. each code is subjected to a frequency count) (29). Themes were identified by the 1st author and discussed with the 3rd author. Next, the 1st and 3rd authors independently coded all responses. A Cohen's kappa (30) of 0.77 was obtained for the most helpful aspects of the group sessions, and of 0.93 for the least helpful aspects, demonstrating a high level of agreement between the 2 authors (31). Discrepancies were discussed until consensus was reached between both authors on the final coding of participants' responses.

Analysis of aspects of the group sessions participants found most helpful revealed 5 themes, which are presented in Table 3. The majority of participants found that working together in an open, friendly and respectful group atmosphere was helpful. One participant described that "Although individuals, we all got along and discussed whatever we felt of concern. No one was put down or made to feel insignificant." One participant called it "friendship," and another "the togetherness feeling." Only 3 of the 12

Table 2. Behavioural outcomes			
Summary of Diabetes Self-Care Activities	*Pre*	*Post*	*Follow-up*
Last 7 days healthful eating plan	4.93 (1.28)	5.60 (1.18)	4.87 (1.69)
Past month healthful eating plan	5.13 (1.25)	5.47 (1.06)	5.40 (1.06)
Last 7 days fruits and vegetables	5.21 (1.97)	5.73 (1.58)	5.33 (1.76)
Last 7 days avoid high-fat foods (meat/dairy)	3.86 (1.46)*	4.67 (1.17)*	4.43 (1.56)
Last 7 days 30 minutes physical activity	3.80 (2.08)	4.27 (2.28)	4.33 (2.44)
Last 7 days specific exercise session†	3.27 (2.02)*	4.20 (2.04)*	3.67 (2.44)

Data are mean (SD)
*Significantly different at p<0.05
†A specific exercise session (e.g. swimming, walking) other than what one does around the house or as part of one's work

Table 3. Results of inductive classical content analysis of responses to open-ended questions

Theme*	Count
Aspects of groups most positive/helpful	
Friendship/respect/openness/togetherness	8
Information from other group members	6
Shared experience/all in same boat	4
Information and encouragement from facilitators	3
Increased self-awareness	5
Aspects of groups least helpful or to change	
Larger/more varied groups	5
Follow-up meetings	2
More input from participants	1
More answers regarding long-term	1

*Themes presented in order of endorsed by most to least number of participants

participants specifically mentioned the facilitators as being a helpful aspect of the group. Aspects of the group sessions participants found least helpful or would change for future groups are also presented in Table 3. Five participants mentioned that larger or more varied groups would be helpful (2 of these were in a 3-member group). Two participants mentioned that follow-up groups would be helpful.

DISCUSSION

The aims of this study were to develop and pilot-test a brief psychosocial group intervention for type 2 diabetes self-management. The intervention was well received by participants, who all found it helpful in managing their diabetes. Although the intervention consisted of only 6 sessions, many participants commented that they had developed a sense of friendship and togetherness with other group members and that they felt very comfortable and respected when discussing challenges they face in managing type 2 diabetes.

At the 3-month follow-up, participants had experienced a decrease in distress over their diabetes regimen from pre-intervention levels. This result is particularly promising, as it has been shown that decreasing diabetes-specific distress is associated with improved glycemic control (12). Participants also decreased their intake of high-fat food and increased their level of exercise, although these behaviour changes were not fully sustained at the 3-month follow-up. It is not possible to know exactly why these behaviour changes were not sustained, although it is well known that health behaviours such as exercise or diet are difficult to maintain (32). Many participants noted that knowing they would be accountable to other participants and facilitators each week with regards to their behaviour goal helped with motivation.

As discussed below, follow-up meetings or a more tailored discussion on relapse prevention, with an emphasis on finding others in their lives to help them stay accountable, might have been helpful for participants to maintain the positive changes they had undertaken.

There were no significant changes in levels of depression (CES-D) or satisfaction with life (SWLS) scores. In terms of the CES-D, even before the intervention began, participants' scores were well below the proposed threshold for clinically significant depression (i.e. a CES-D score of 16). For the SWLS, scores can be interpreted in terms of absolute values, with scores between 21 and 25 representing "slightly satisfied" and scores between 26 and 30 representing "extremely satisfied" with life (33). In the present study, participants' scores moved from the "slightly satisfied" to "extremely satisfied" range from the beginning of the intervention to the 3-month follow-up. Thus, although participants demonstrated high levels of psychosocial functioning at the beginning of the intervention, which might have precluded significant changes from occurring, small changes in both of these measures might nonetheless suggest a slight increase in general psychological well-being.

A few modifications to the current intervention could be incorporated for future groups. First, some participants expressed a desire for follow-up sessions. One or more follow-up sessions could be incorporated, either as group meetings or in the form of "check-in" phone calls from facilitators several months after the group intervention. Alternatively, or in addition, sessions could be offered at 2 to 4 week intervals rather than weekly. An equal number of sessions over a longer time period might provide more opportunities for participants to incorporate the skills acquired during sessions into their daily lives and share their new experiences and challenges with group members and facilitators. These modifications might increase the likelihood that participants will maintain the positive behaviour changes they undertook during the intervention. Also, future groups should aim to have a minimum of 4 participants and, to plan for attrition, at least 6 participants for the initial session. In addition, more diverse groups (e.g. with respect to sex, age) might prevent groups from becoming overly social at the expense of focusing on session content. Finally, more in-depth exit interviews and on-going qualitative feedback from participants would be helpful in continuing to develop the intervention.

The last session on managing long-term goals and motivation could provide more focus on personalizing participants' strategies for long-term behaviour change and preventing relapse into old unhealthy habits, modelled on Marlatt and colleagues' work on relapse prevention (34). For example, group members could identify their own high-risk situations and emotions (e.g. social gatherings, negative emotional

states) and actively problem solve these using techniques borrowed from evidence-based relapse prevention interventions (e.g. generating alternatives and consequences of actions, behavioural rehearsal) (35).

Finally, several participants raised travel time and cost as negative aspects of attending group sessions. Group facilitators could coordinate with other healthcare practitioners (e.g. nurses, dietitians) who could offer other medical services either directly prior to or following group sessions to address this potential barrier.

The current study pilot-tested the intervention protocol on a small convenience sample. ACCORD participants may not be representative of all individuals with type 2 diabetes, as they were already participating in a long-term study on diabetes management. In the future, a randomized controlled trial using a larger, representative sample of people with type 2 diabetes should be conducted to determine whether the intervention results in better outcomes than treatment as usual.

The value of the current intervention's structure as a week-by-week, structured protocol lies in the ease with which the intervention could become widely accessible. That is, the intervention developed for this paper would become a training manual, such that other healthcare practitioners (e.g. nurses, social workers), or even university-educated individuals interested in healthcare, could be trained in delivering the intervention. This type of manual-based, structured brief intervention provides a unique and valuable tool to meet the CDA guidelines related to increasing access to psychosocial assessments and interventions. There is a clear and urgent need for such a protocol, given that lack of access to psychosocial interventions has been highlighted as an issue in diabetes care (5).

In conclusion, the current study demonstrated that a brief, 6-session psychosocial group intervention holds much promise for individuals with diabetes. As the intervention resulted in decreases in diabetes-specific distress and improvements in self-care behaviours, it can become an important tool for healthcare professionals to use in helping patients better manage their diabetes for long-term health.

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AUTHOR DISCLOSURES

AUTHOR CONTRIBUTIONS

All of the authors were actively involved in the development of the intervention's protocol. BS was primarily responsible for data analyses, preparation of the manuscript and its submission; with critical input and approval of the final version of the manuscript by MV and SC. BS and SC acted as intervention facilitators under the supervision of MV.

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