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CASE STUDY 3

Lessons Learned in Supporting Women With Prediabetes Through Maintaining Diet and Exercise Behavior Changes Beyond a Diabetes-Prevention Counseling Program

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Interventions involving exercise and diet can reduce the progression of Type 2 diabetes, yet they are often short-lived. Progressing toward self-managed maintenance is also challenging. If supports are in place to help individuals with behavior changes beyond immediate programming, they are more likely to maintain these changes. This is particularly the case for women, who often struggle to maintain diet and exercise changes and can benefit from social support. Small Steps for Big Changes is a 3-week counseling program housed in a local YMCA that aims to help people make exercise and diet changes. To understand how to best support women in maintaining these changes beyond program delivery, a knowledge-sharing event was held for 14 women who completed the intervention. The women engaged in a focus group to share challenges they had experienced in making diet and exercise changes and recommendations for continued support. Data were analyzed using a thematic analysis, and three recommendation areas were identified: (a) establishing peer support networks, (b) creating platforms to communicate prediabetes-related information, and (c) providing ongoing trainer support. Several recommendations have been implemented to support these women, and other individuals, postprogram. This case provides insights and recommendations for integration of initiatives beyond delivery of a behavior-change program housed in a community organization.

Keywords: community, qualitative, social support

In 2017, 425 million adults worldwide were living with diabetes and 325 million people were at risk of developing Type 2 diabetes (T2D; International Diabetes Federation, 2018). In Canada, it is estimated that 5.7 million Canadians have prediabetes, a condition characterized by impaired glucose regulation that greatly increases the risk of developing T2D (Diabetes Canada, 2017). Without weight loss and moderate physical activity, 50% of individuals living with prediabetes will develop T2D within 8–10 years (Diabetes Canada, 2018). Diabetes costs the Canadian health care system $15 billion/year and is projected to reach $39 billion by 2028 (Diabetes Canada, 2018). Adhering to a healthy diet and regular exercise can halt the progression of prediabetes to T2D, thus reducing health care costs and improving quality of life for individuals with prediabetes (Bilandzic & Rosella, 2017).

Landmark intervention trials in individuals with prediabetes (e.g., the Diabetes Prevention Program, Finnish Diabetes Prevention Study, and Da Qing IGT) demonstrated that increasing physical activity and improving diet were effective in preventing T2D (Diabetes Prevention Program Research, 2002; Lindström et al., 2003). Specifically, the Diabetes Prevention Program also found that exercise and diet modifications were more effective than the leading pharmaceutical drug at preventing T2D (e.g., 58% vs. 31% respectively; Diabetes Prevention Program Research Group, 2002). A recent review investigated randomized controlled trials using a variety of glucose-lowering therapies in the prevention of T2D (Chatterjee, Khunti, & Davies, 2017). Results indicated that lifestyle modification was the most effective and safe T2D-prevention strategy.

However, physical activity levels often drop after supervised exercise interventions (e.g., Larson, McFadden, McHugh, Berry, & Rodgers, 2018). In a 10-year follow-up to the Diabetes Prevention Program, results showed that over time, the average physical activity time became similar across the three treatment groups (+1.24 MET hr/week; lifestyle, metformin, and control groups). In this study, women had significantly lower physical activity than men (13.0 vs. 20.6 MET hr/week, respectively; Rockette-Wagner et al., 2017), which is concerning given that 13% of the Canadian female population are estimated to have prediabetes (Rosella, Lebenbaum, Fitzpatrick, Zuk, & Booth, 2015). Although numerous studies have examined the effectiveness of T2D prevention or maintenance of lifestyle behavior changes, few have explored *why* this occurs and worked with participants to adhere to these health-related behavior changes, particularly women.

These interventions were costly and time intensive for both participants and highly trained health professionals. For example, the Diabetes Prevention Program cost $2,780 U.S. per participant and included 16 hr of core curriculum delivered in a one-on-one manner by a lifestyle case manager over 24 weeks, including supervised exercise sessions (Hernan et al., 2003). It also comprised 6 months of follow-up with monthly in-person or phone-call check-ins. Although this cost is much lower than that needed to treat T2D over a lifetime, the time and resources required for such a program do not make for a sustainable model to translate a program from the research laboratory setting to being housed in a community non-profit organization. Translating diabetes-prevention programs into the community via community organizations is a viable solution for sustainable services (e.g., Pronk, Remington, & Community

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Preventive Services Task Force, 2015) and has been done on several occasions (e.g., Aziz, Absetz, Oldroyd, Pronk, & Oldernburg, 2015).

The Small Steps for Big Changes Program

The YMCA is a nonprofit charity with a mission dedicated to building healthy individuals and communities and is also a leader in community programming. Within the Okanagan region (British Columbia, Canada), they have a strong reach and a history of successful implementation of health-promotion programs, making them a valuable community partner. Partnering with the YMCA as a means for wide-scale implementation of an evidence-based strategy to reduce the risk of T2D has been done on several occasions (e.g., Ackermann et al., 2011). Until recently, the interior of British Columbia, a western province in Canada, did not have a structured diabetes-prevention program in place. This gap was concerning for two reasons: (a) T2D prevalence has increased by 59% over the past 10 years in this province, and (b) diabetes rates in this province have risen at a faster rate (from 4.7% to 9.0%) from 2001 to 2016 than in the rest of Canada (from 4.2% to 7.0%; Interior Health, 2017). When compared globally, the prevalence of diabetes in the British Columbia interior is greater than the global prevalence (8.5%; World Health Organization, 2018). As such, there was a need for diabetes-prevention efforts in this region. Thus, in 2017, Small Steps for Big Changes (SSBC), a brief 3-week, theory-based diet and exercise diabetes-prevention counseling program, was translated into a local YMCA. The program was developed and piloted in a laboratory setting to test the efficacy and acceptability of the intervention design and was found to improve health and exercise adherence in people at risk of T2D at 6-month follow-up (Bean, Dineen, Locke, Bouvier, & Jung, 2019). The aim of launching SSBC in a community organization, the local YMCA, was to reach more individuals at risk of developing T2D in an accessible way, while ensuring program effectiveness on health outcomes (e.g., blood glucose, physical fitness, blood pressure). Having the program housed in a community organization can help reach individuals within and outside the health care setting, as individuals do not require a referral from their doctor to access this program, and walk-ins can contact the program directly to assess their eligibility.

The SSBC program is a personalized one-on-one program designed to prevent the progression of prediabetes to T2D through exercise and diet modifications. Individuals between the ages of 18 and 65 who are at risk for developing T2D (HbA1c test of 5.7–6.4% or a score of ≥5 on the American Diabetes Association risk assessment) are eligible for the program. For a full list of inclusion and exclusion criteria, refer to Bourne et al. (2019). The program consists of two phases: (a) a 3-week program of diet and exercise counseling, including exercise sessions, and (b) a 12-month follow-up. In the first phase, all participants engage in six one-on-one sessions (Week 1 = three sessions, Week 2 = two sessions, Week 3 = one session). Sessions are facilitated at the community organization (local YMCA facility) by trained research staff (hereafter referred to as trainers). Each session includes behavioral counseling and engagement in exercise (high-intensity interval training or moderate-intensity continuous training). Home sessions ($n = 9$ spaced between in-person sessions) are nonsupervised, and clients work on their diet and exercise goals that were set during the in-person sessions. A complementary 1-month membership is provided to all participants to use at one of three local YMCAs. In the follow-up phase, participants meet with their trainer three times postprogram (1, 6, and 12 months). They are also encouraged to reach out to their trainer at any point throughout this phase.

The Case

At the time of this study, 213 participants had completed the program housed at the local YMCA (70% women; Bean, Dineen, et al., 2019). This case study is part of a larger project that used a longitudinal approach to qualitatively explore women's experiences throughout their behavior-change journey during and after participation in a diabetes-prevention program housed in a community YMCA facility. "Journey" is defined in this context as experiences attempting to maintain their new behaviors (diet and exercise) associated with engaging in the program. This study was undertaken because women often struggle to maintain their health-related behavior changes (e.g., Rockette-Wagner et al., 2017). Despite the difficulty of maintaining exercise and diet modifications postprogram, limited research has been conducted in this specific area. Although women in this larger study perceived the program to positively influence their lives through trainer support and education on diet and exercise lifestyle practices, many women outlined perceived barriers, including lack of continued support, related to maintenance of health-related behavior changes that existed once the program ended (e.g., Bean, Lewis, & Jung, 2018). Based on this finding that emerged organically from the larger project, the research team decided to explore these notions further through adopting a community-driven research approach that occurred predominantly due to prolonged engagement and consultation in the community context (Schinke, Smith, & McGannon, 2013).

Similar barriers have been documented by individuals engaging in exercise interventions, whereby an unmet desire for social support and accountability can influence exercise dropout or lack of behavior-change maintenance postprogram (e.g., Larson et al., 2018; Tulloch et al., 2013; Wycherley, Mohr, Noakes, Clifton, & Brinkworth, 2012). However, if adequate support and supervision from professionals (e.g., trainers) or support from families is present, individuals perceived feeling success toward adherence to health-behavior change (Tulloch et al., 2013; Wycherley et al., 2012). To date, the majority of research that has been undertaken in this area explored barriers and facilitators in working toward behavior-change maintenance. While these study findings have indicated support as a facilitator for behavior-change maintenance postprogram, limited research has proactively gained insight on *how* to provide ongoing support to participants postprogram in a sustainable way. Furthermore, even less research has used an action-oriented approach to work with participants to explore their views on tangible support initiatives postprogram and integrate such recommendations into practice. This study aimed to address these gaps. Thus, the case in focus is a knowledge-sharing event that took place in December 2018 with 14 women, with the purpose of exploring the challenges women clients experienced in making and sustaining diet and exercise lifestyle changes and their recommendations for continued support toward making these changes beyond the 3-week SSBC program. In the context of this case study, support is categorized into four types: instrumental, informational, emotional, and appraisal (House, 1981). The present case study works toward a recent call to shift the focus of research to investigate how to sustain effects of interventions in practice (e.g., Love, Adams, Van Sluijs, Foster, & Humphreys, 2018).

Building off this work, and working to address the limited research that exists to understand *how* women can be supported

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beyond immediate delivery of a behavior-change program, we hosted a 3-hr knowledge-sharing event for women who were participating or had completed the program in the past year. This knowledge-sharing event was used as an opportunity to conduct community-engaged scholarship (Cutworth, 2013) and for participants to share and learn from each other's experiences and make connections with others experiencing similar circumstances. Such a case study can provide insight on one way to do community-engaged research in the area of physical activity (Schinke, McGannon, & Smith, 2013).

Methodology

Design

The study was framed on the principles of constructivism. Researchers working with the lens of constructivism acknowledge a relative ontology, a subjective epistemology, and a naturalistic set of methodological procedures (Denzin & Lincoln, 2018). In the present study, the accounts gathered through a focus group (participants' realities) were deemed to encompass captured moments of human lived experience set in a social world, influenced by dynamic interactions between contexts and individuals across time (Denzin & Lincoln, 2018; Sparkes & Smith, 2014).

As female researchers passionate about conducting community-engaged research in the areas of sport and exercise psychology, we are committed to knowledge translation of evidence-based strategies and practices to help improve community programming and the lives of participants. Collectively, we have over 25 years of working with community organizations to design, implement, and evaluate good-quality programming. The first and third authors have particular interest in female health and well-being, and all were involved in SBBC in varying capacities (e.g., Bean, Forneris, & Halsall, 2014; Bean, Fortier, & Chima, 2019; Jung, Bray, & Martin Ginis, 2008; Martin Ginis, Jung, & Gauvin, 2003). We adopted an action-oriented approach to research (Small & Uttal, 2005; Young, 2013). Specifically, action research, the most widely used form of action-oriented research (Small, 1995), was used to guide this case study. Action research is "about improving the quality of human life, acquiring knowledge to become better practitioners, and developing strategies to address problems" (Beaulieu, 2013, p. 33). Such an approach often focuses on a single case, with preference for qualitative methods over quantitative. Action research values collaborations with nonresearch participants, whereby researchers bring theoretical knowledge and experience, as well as the skills to conduct such research, and the participants bring practical knowledge and lived experience (Small, 1995). We worked with participants to understand their challenges and how to provide ongoing support to women beyond program delivery. The results of action research aim to directly benefit the case and the participants involved, so it is important to making findings available to the participants and/or their representatives in a manner that is both timely and easily understood (Small, 1995). We integrated recommendations into practice within 3 months of data collection by offering tangible support avenues for these women and other program participants.

Participants

Twenty-five women who had completed ($n = 19$) or were currently engaging in SBBC ($n = 6$) were invited to a knowledge-sharing event that took place in December 2018. Fourteen women (mean age 58.86 years, $SD = 4.67$) attended the event and shared personal accounts of their experiences with successes, as well as facing and overcoming barriers, in making behavior changes in their lives (see Table 1 for demographic information).

Table 1 Descriptive Statistics of Women Involved in Knowledge-Sharing Event ($N = 14$)

Variables	
Age, years, *M* (*SD*)	58.86 (4.67)
Ethnicity, *n* (%)	
White	14 (100)
Marital status, *n* (%)	
Married	10 (71.4)
Single	2 (14.3)
Missing	2 (14.3)
Annual household income, *n* (%)	
$0–24,999	1 (7.1)
$25,000–49,999	3 (21.4)
$50,000–74,999	2 (14.3)
$75,000–99,999	1 (7.1)
$100,000+	2 (14.3)
Missing	5 (35.7)
Education, *n* (%)	
Less than high school	2 (14.3)
High school	1 (7.1)
College diploma	10 (71.4)
Bachelor's degree	0 (0)
Missing	1 (7.1)
Occupation, *n* (%)	
Retired	9 (64.3)
Working full-time	2 (14.3)
Working part-time/partially retired	2 (14.3)
Missing	1 (7.1)

Data Collection

Ethical approval was secured prior to study commencement, and written informed consent was obtained in writing from all women before engagement in the event. The knowledge-sharing event was a lunch event, and women were provided with three avenues to communicate and share their experiences, thoughts, and feelings related to SBBC and their ongoing exercise and diet modifications. First, participants could engage in a speaker's corner, where they provided audio or video feedback about the program (e.g., what they liked, what they learned, program recommendations). Second, participants could engage in Head, Heart, Feet, an activity that allows individuals to reflect on what they learned (head), enjoyed (heart), and how they are applying what they learned in their life (feet). Third, women were invited to participate in a focus group, which aligned with the community-engaged approach to this project, whereby the women could "collaboratively share ideas, feelings, thoughts, and perceptions" regarding their challenges and recommendations for ongoing support to sustain diet and exercise behavior changes beyond the 3-week program (Sparkes & Smith, 2014, p. 83). A focus group was chosen based on the study sample compared with similar demographic variables (i.e., age, gender, ethnicity) and program

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experiences, as homogeneity is often valued in focus-group composition to capitalize on people's shared experiences (Sparkes & Smith, 2014). Such an approach is also valuable during the planning and design phase of a program or similar initiative (Mitchell & Branigan, 2000). Focus-group protocol recommendations by Sparkes and Smith (2014) were followed, including adopting an in-person, face-to-face, and semistructured approach. The first and third authors facilitated the focus group, provided an overview of the purpose, reminded participants that there are no right or wrong answers, and led a discussion guided by three questions that aligned with the study purpose ("What has worked for you so far in your maintaining diet and exercise changes?" "What challenges have you experienced in working toward maintaining diet and exercise changes?" "How can we continue to provide support to you once you have finished the program?"). The facilitators used probes to further understand participants' perceptions and experiences (e.g., "What could help you overcome this challenge?" "How do you see that (recommendation) being carried out in practice?"). It should be noted that the facilitators were purposefully selected, as we felt that having same-gendered individuals could help establish rapport and a sense of trust in the group. The focus group was audio-recorded and lasted 85 min. The three activities allowed for multiple mediums (written, oral, visual) for participant insight and feedback. Informal conversations also took place over lunch among participants and between participants and the research team.

Data Analysis

Data from the focus group were transcribed verbatim, resulting in a 26-page transcript (12-point font, single-spaced). An iterative inductive thematic analysis was used based on Braun, Clarke, and Weate's (2016) six-phase method for identifying, analyzing, and reporting themes within data. An inductive approach allowed for the analysis to be data driven, where the content itself guided the developing analysis (Braun et al., 2016). First, the transcript was read and reread independently by both the first and second authors, who both had experience in qualitative data analysis, to become familiar with the data. Second, meaningful extracts of data were identified by these two researchers and assigned initial codes (e.g., establishing a peer support program, creating a newsletter, offering drop-in hours, facilitating a walking group). Third, codes were grouped by content into overarching themes (e.g., establishing peer support networks). Fourth, themes were reviewed to ensure their internal homogeneity (data within themes shared common features) and external heterogeneity (themes were distinct from one another). During this step, an iterative collaborative approach to analysis was undertaken by the research team to ensure that data were presented in a comprehensive manner (Creswell & Clark, 2017). The third author examined whether the identified codes and themes were consistent with the data collected and verified that they were accurately represented. The three researchers met to discuss any coding discrepancies. Minor discrepancies arose (e.g., labeling of themes, extract selection) and were discussed until agreement was reached. These changes occurred in the fifth step, when themes were refined by assigning specific names to them, with particular emphasis on ensuring that each theme was consistent with the findings in the overall data set. At this time, a summary of the knowledge-sharing event was sent to all 14 women via e-mail. This summary included an overview of the main themes and subthemes and outlined next steps of how to work together to integrate some of the initiatives into practice. Such a summary was sent to ensure that an accurate description of the data was interpreted and subsequently acted on. Feedback was encouraged from participants to ensure that data were accurately being interpreted by the research team. The sixth step involved writing the manuscript, whereby researchers selected the quotes that they believe best reflected the participants' lived experiences, in line with the study's purpose, paradigm, and approach. Extracts were chosen that best highlighted the voices of participants, illustrated the specific themes and subthemes, ensured a representation of all 14 women's insights, and brought the findings to life through exemplifying the data's richness (Goldberg & Allen, 2015).

Strategies for Rigor

We sought to maintain rigor throughout the research process, particularly as it related to conducting community-engaged research. First, the research team was well positioned to conduct such a case for several reasons: our extensive community work in the areas of sport and exercise psychology, specifically diet and exercise behavior-change programs; our commitment to knowledge translation of evidence-based strategies and practices to help improve community programming and positive impact for participants; our investment in conducting research to foster health and well-being in girls and women; and our prolonged engagement in both the program and the community context since its inception (Schinke, Smith, & McGannon, 2013). Because of the final reason, we were able to build off findings from a qualitative exploration of participants' experiences in program participation at the YMCA community site, which resulted in the creation of this knowledge-sharing event (Bean, Dineen, & Jung, 2020). Specifically, on learning about the challenges and lack of support women were experiencing postprogram, we fielded the idea of hosting such an event with participants to gain their thoughts before formalizing the plans. These steps helped us localize the research practices, form clear research questions based on participant insight, and recognize the importance of adopting an action-oriented approach where we could put recommendations into practice (Schinke, Smith,& McGannon, 2013; Sparkes & Smith, 2009). Hosting such an event allowed us to have a plan in place for data collection but allowed for a degree of flexibility, necessary in conducting research in community settings (Nakkeeran & Zodpey, 2012). Moreover, having both formal (i.e., focus group) and informal (i.e., lunch, mingling) activities aimed to assist with rapport building between participants and between the research team and participants. The inclusion of a meal as part of a focus group has been identified as valuable in several community-based research projects (e.g., Daley et al., 2010). Finally, as noted, a variation of member checking was used to ensure the quality of the data analysis and interpretation (Sparkes & Smith, 2009), whereby a summary of the finding was sent to all participants via e-mail once the data were analyzed.

Results

Exploring and Integrating Recommendations From the Knowledge-Sharing Event

Study findings are communicated through the participants' voices using in-depth quotations. Following this section, researcher reflections are presented that draw from study involvement and the broader literature. Listening to the women, the importance of ongoing support was critical in helping them in their diet and

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exercise behavior-change journeys. During the program, support came from their trainers, but when the program ended, many women expressed a desire for continued support from peers, trainers, and additional program content. The results are organized in three main themes for recommendation: (a) establishing peer support networks, (b) creating platforms to communicate prediabetes-related information, and (c) providing ongoing support from trainers. In the following sections, we elaborate on these themes and provide participant insight to illustrate the ideas and recommendations that emerged from the data. In addition, we outline how collaborative efforts have resulted in the integration of several recommended community-engaged initiatives. In this context, community engagement allowed for a contextualized understanding of community members' perceptions based on their recommendations for initiatives that facilitate a strong relationship between community members.

Establishing Peer Support Networks

Developing peer support networks was a main recommendation of the knowledge-sharing event. Peer support has been used in many chronic-disease interventions (e.g., Embuldeniya et al., 2013). All women agreed that the program trainers were knowledgeable, supportive, and effective at helping facilitate their behavior change; however, they were not always relatable, predominantly due to their age. For example, two women stated, "I got all the support in the world from these lovely people who have no idea what it's like to be 60" and "It's a really important point because there's this lovely young guy and it's hard to relate to him . . . when you struggle with weight or getting in exercise and he's as fit as anything." These two quotes are in direct comparison to the immediate sounds of friendly chatter and sharing of strategies indicating initial signs of bonding, camaraderie, and support that emerged from the knowledge-sharing event. As such, the women discussed wanting to strengthen peer support to increase their sense of relatedness postprogram.

Four recommendations relating to fostering peer support networks were identified: (a) establishing a peer support program (pairing a program alumna with a new participant), (b) having group monthly meetings, (c) facilitating a walking group, and (d) creating social media platforms that allow for virtual support. The first recommendation, establishing a peer-mentorship program, arose from women discussing how it might be helpful for individuals starting the program to have a mentor (someone who had completed the program) available to answer questions, provide tips, and support them during and after the program. As one woman described, "Maybe, when people start the program [you can ask if they want a mentor] . . . and then as people graduate you can say 'Would you like to join our list of mentors?'" Opportunities to act as a program mentor were seen as a benefit to the maintenance of behavior change, as there would be a desire to lead by example. As described by one woman, "All of a sudden you're saying, 'Yeah, I'm going to help someone out.' And guess what? You have to make sure you're doing your piece. So it helps both sides."

The second recommendation, having monthly group meetings, emerged as the research team shared the progress of our research partnership with the YMCA and the potential for program expansion. One woman expressed the following:

> If you're going to partner with the Y[MCA] more, do they have meeting rooms or something? If they could offer up a meeting room to have a support group get together first Wednesday evening of every month. Then we could get together, because even here [at the event], I'm hearing handy little tips. I think you need the support network.

Another woman proposed a third recommendation of starting a walking group with similar goals: to provide an opportunity for informal social support between current and past program participants, while also incorporating exercise. Finally, the women discussed the benefit of having a platform to promote these events, as well as sharing recipes and other strategies with one another. The two most-discussed platforms included Facebook and e-mail. In all cases, the benefit of making connections and sharing with peers who were making similar behavior changes was seen as valuable to help achieve their exercise- and diet-related goals.

Since the event, many of these recommendations have been integrated. We wanted to support the woman who wished to start a walking group by promoting the group to all past and current program participants and by creating a platform (Facebook) for her to advertise upcoming walks. The Facebook group doubles as a platform for individuals to use as an online community and promote reach and awareness of other community-engaged initiatives. The free participant-led walking group has been running weekly for several months. Every week the walking group chooses a new route (varying in difficulty, length, and scenery) around the city and carpool options are provided. To encourage socialization, there is an optional opportunity to have coffee postwalk. One individual posted about the walking group on the Facebook group:

> In the infant stage, our small group are joining me, followed by a coffee and chat about our successes. I am hopeful we will become even stronger together, supporting each other as we embrace this new way of life. . . . This is a pivotal time in our success to embrace relationships that support a common goal—to remain healthy while continuing to enjoy a fulfilling, satisfying life.

Finally, we have secured a monthly meeting space hosted at the YMCA for drop-in meetings. These monthly meetings are held at the same time every month and provide the opportunity for past and present participants to connect with others, share experiences, and offer each other support. Monthly meetings have been regularly hosted since summer 2019 and have included hosting guest speakers (e.g., dietitian), cooking low-carbohydrate recipes, or simply checking in with one another.

Creating Platforms to Communicate Prediabetes-Related Information

Recognizing that exercise and diet modifications are challenging, the program provided a jump-start on understanding prediabetes and providing information necessary to participants' behavior-change journey. However, the women discussed how new questions, roadblocks, and ideas continued to emerge postprogram. They indicated that continued awareness of risk-reduction strategies is necessary for maintenance of behavior change as they identified areas of continued struggle. For example, "Honestly, I struggle with the nutrition part"; "That's where I'm struggling—the starch"; and "Sugar, that's fine; it's the carbs that get me."

The women expressed ideas on how we could help support their continued exercise and diet-modification efforts; ideas included check-ins and updates on relevant prediabetes information. The women discussed ways to enhance their commitment to their journey through increasing awareness, such as regular e-mail or newsletter, with food, exercise, and motivational tips.

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As one woman said, "There's a breast cancer support group—they send out e-mails regularly—whether you participate or not, you can read through them. It's an awareness thing." Finally, the women wanted to spread word of the SSBC program and prediabetes awareness. As demonstrated by one woman, "I've told my sisters about this program and said you guys should go and at least get tested."

In response to their recommendations, we created a quarterly newsletter that is driven by the SBBC community (researchers, participants, YMCA staff). For example, the newsletter name was decided by a community member vote, and content ideas are encouraged and discussed at monthly meetings and via the Facebook group. The newsletter addresses the requests of participants by showcasing helpful exercise and diet tips, profiling SSBC stakeholders, offering healthy recipes, and sharing community-engagement initiatives (e.g., monthly meetings, walking group). In addition to the newsletter, we have provided greater access to program-information pamphlets for participants to be program advocates, supporting or recommending the program to others. Initiatives include adding a mailbox to the office door at the YMCA and bringing pamphlets to each monthly meeting.

Providing Ongoing Trainer Support

The relationship between trainer and participant was valued for knowledge exchange, accountability, and an ongoing sense of relatedness. This familiarity between trainer and participant was perceived as a facilitator to risk reduction by the participants. The ability of participants to see their trainer at the YMCA postprogram, being offered opportunities to ask questions, be weighed, or simply say hello to a familiar face was valued. The women recommended continuing to capitalize on the space in the community organization by offering drop-in hours for participants to check in with a trainer: "I don't know if you [could] have an open office for an hour, say Monday morning, to come say hi—to get weighed." In addition to the friendly trainers, the broader YMCA staff and facility were seen as being supportive. The women discussed how YMCA staff welcomed them:

> You form a bond with them [YMCA staff], as well. They were there for all your hard work—yeah, no question about it. And we talked about it earlier at this end of the table that the Y[MCA] membership is more conducive to this group as opposed to the bodybuilders; they're not at that gym [YMCA fitness center] a lot to make us feel uncomfortable. In fact, I think we make them feel uncomfortable.

Several of these recommendations have been implemented to provide ongoing and continued support for women involved in the knowledge-sharing event and other participants who are or have engaged in the program. Trainers are encouraged to initialize the connection between their participants and the YMCA by introducing their participants to the YMCA staff and helping them feel comfortable in this environment. In addition, we have opened up a participant advisory committee where participants are welcome to join to continue to provide their insight into program delivery, implementation, and expansion.

Reflections

This case study provides insight on supports that can be used to improve the effectiveness of a community-housed program beyond immediate delivery. Specifically, three types of House's (1981) support were recommended through a variety of initiatives: appraisal support through tangible peer support (walking groups, peer mentoring, monthly meetings), informational support through creating resources to provide additional prediabetes and health-related information (newsletter, meetings), and emotional support in creating initiatives that bring together individuals working through similar experiences and toward similar goals (walking group, peer mentoring, monthly meetings). From this case, we have reflected on the process, including recommendations for ongoing support and application of such support. Finally, we reflect on lessons learned from this process to date: (a) the benefit of a community context, (b) clients are the best program advocates, and (c) ensuring that resources are in place to support recommended initiatives beyond program delivery. Such reflections and lessons learned have informed and will continue to inform our operating practices in integrating and promoting these initiatives, while also informing our research practices, through detailing the process of providing ongoing support to help sustain exercise and diet changes for women postprogram.

Benefit of a Community Context

A strong university–community organization partnership enabled the program to run for over 2 years, to date, housed in a community organization. From the knowledge-sharing event, women identified the community organization (YMCA) as an important element of the program, and when the program ends, participants have the option of continuing their membership at the YMCA. Housing the program in this organization was done strategically, as the YMCA provides financial support for those who are unable to afford a membership. Many individuals have also referred family members or friends to join the YMCA to foster ongoing peer support:

> I now have a membership at the [location] YMCA, and with the program, my husband joined too, which was awesome. . . . When you walk in, [trainers] recognize you and say "How's it going?" and I find they're our cheerleaders, too. They're not holding you accountable per se, but you know you have a routine and so after a year of being with SBBC that's what I found—I really like the staff.

This notion of being housed in a community organization enables opportunities to provide ongoing support beyond program delivery, which has been valued by women in other health-focused programs (e.g., Tava'e & Nosa, 2012). For example, instrumental support is provided to participants by offering accessible options, including hosting at or using the YMCA as a starting place for recommended initiatives. Specifically, YMCA membership is not required to engage in these initiatives; financial support is provided for those who want to continue but are unable to afford a membership. Based on the recommendations provided by participants, it was feasible to create and build a sense of social community among program participants (i.e., through offering walking groups, meetings held at the YMCA site, Facebook group), for reasons similar to offering the program in a community organization; it minimizes barriers in terms of accessibility. These ongoing supports are still available to all participants should they no longer wish to exercise in a YMCA facility. Moreover, the creation of social media platforms (i.e., Facebook group) as a virtual SBBC community has helped those looking for alternative and complimentary support and acts as a platform for coordinating and promoting several of the community-engaged initiatives (i.e., promoting monthly

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meetings and communicating when and where the walk will take place each week).

Clients Are the Best Program Advocates

It is necessary to acknowledge that program participants had lived experiences of undergoing important and often challenging exercise and diet changes. Providing them a platform to share their voices related to program engagement and working toward maintenance was critical. For many, such changes were taking place at a time in their lives when they had resources (e.g., time) to make the changes, as many program participants were partially or fully retired ($n = 11$). With the average retirement rate in Canada being 63.8 years (Statistics Canada, 2018), participants in this study were slightly younger than national average. This perception around available resources is consistent with past research where individuals felt they had time to devote to improving their lifestyle because of being retired (e.g., Penn, Moffatt, & White, 2008). For example, McDonald, O'Brien, White, and Sniehotta (2015) conducted interviews with 28 adults (from a diverse range of socioeconomic and occupational backgrounds) within 24 months of retirement. The majority of participants perceived retirement as an opportunity for increased physical activity and identified factors perceived to influence changes in physical activity behavior after retirement, including resources (e.g., time, energy), structure of daily life, and opportunities for physical activity. Participants in the present study recognized the value of taking ownership and control over their lives, as one woman discussed:

> We're smarter, because we're older. . . . You see the finite end coming and now you are, for the last time, probably going to be able to change how that course is going to go, and its not just that you're trying to do up your jeans, its not good enough. This one has to scare you a bit and you have the controls.

With the action-oriented research approach, it is important to provide a platform for individuals to share their voices and insights into everyday experiences (Young, 2013). Many participants spoke of how the program positively affected their daily lives and were adamant about taking ownership to raise awareness of prediabetes and promote the program to others including family, friends, physicians, and the government. For example, one woman asked,

> Is there something we can leave at our doctor's office, because I know I'm not the only one my age in the office. So can we, as patients or as graduates or alumni, can we take brochures or something and leave them in the office . . . for both doctors and patients? I think the louder and better advocates we are, the better.

Another woman spoke about the necessity of raising awareness around diabetes prevention in hopes of influencing provincial policy:

> If you can go into your ministry of health, or write to them and say "These programs are benefiting me personally and our province." By being proactive, we can support this program more or expand it; it would benefit future medical costs. The awareness is needed to be brought forth. Since the ministry mandates what physicians do, why not be proactive and support such a program. Writing a letter to the ministry or local government official will go a long way. . . . They need to know this [program] works.

Based on recommendations to create platforms to communicate prediabetes-related information at the individual and institutional levels, we created a mailbox full of pamphlets at the YMCA for individuals to take and distribute to their networks. One woman took further ownership to advocate for the program and associated support opportunities by adopting the role of program ambassador:

> This program has made me passionate about something other than food—I want to spread the word about the results of hard work, education, and support from professionals like SBBC staff. . . . I've been hoping for an opportunity to speak to the stakeholders of this program from just a few weeks into my program.

This individual asked to speak at a showcase held in March 2019 that was attended by 54 diabetes-prevention stakeholders (e.g., representatives from nonprofit organizations, physicians, regional health authority, government officials, researchers). She has also been essential to the delivery of such community-engaged initiatives through providing reliable and relatable human resource support in facilitating these initiatives, including the weekly walking group and monthly meetings. Her role has helped ensure that such initiatives and supports are driven by the SBBC community, as she acts as a key knowledge broker and communication liaison between the research team and SBBC community members. Based on her address at the showcase, she was invited to copresent with our research team at a national exercise psychology conference to share her experiences (Bean, Hourston, Dineen, & Jung, 2019). Having such an individuals advocate for and promote such lifestyle behavior-change initiatives beyond immediate program delivery in social networks where they live is critical in sustaining these supports (Giachello et al., 2003).

Ensuring That Resources Are in Place to Support Recommended Initiatives

As part of this community-engaged research, participants provided insight on deliverable outcomes (Schinke, McGannon, & Smith, 2013), particularly related to the initiatives that would be implemented in the community. Despite the excitement and eagerness to follow through on the women's recommendations for ongoing support beyond program delivery, we have been mindful of ensuring appropriate and sufficient resources (i.e., human, financial). These resources need to be available for delivery and sustainability of these supports in the long term. Therefore, the research team and individuals who attend the monthly meetings have been involved in important conversations around not adopting too many initiatives too quickly without adequate resources. We do not want to offer supports that we cannot sustain. Together, we prioritized which initiatives to support first based on identified need and potential for sustainable initiatives with low resource consumption, and we will continue to build on these over time. The ultimate goal is to offer all recommended initiatives if resources permit. For example, we started with offering monthly meetings as a way for individuals to foster and maintain peer support networks, while also ensuring that there is one trainer that attends each monthly meeting to align with the recommendation of ongoing trainer support. Based on monitoring of the monthly meetings' reach and uptake, we would then offer peer mentoring, which would provide direct one-on-one support. Waiting to offer this support avenue was also strategic because, by waiting, there will be time to build a list of potential mentees who have completed the

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program and are well into their behavior-change journey to offer valuable support to current program participants.

We have also integrated the promotion of current community-engagement initiatives (e.g., walking group, monthly meetings) into the program's standard operating procedures and have contacted all current and past program participants. Fostering awareness of these initiatives (e.g., communicating that specific supports are in place, gauging participant interest) has been anecdotally effective in building a network of support so that more individuals can benefit from working toward sustaining exercise and diet changes through engaging with individuals undergoing similar health-related behavior changes in their geographic community.

In terms of human resources, securing individuals at the university and SBBC community levels has been imperative. University students have been critical in carrying out these initiatives. For example, our team includes undergraduate and practicum students who supported the first author in spearheading the newsletter, while other students attend the weekly walking group to provide additional emotional support for attendees. These opportunities foster valuable experiential education and professional-development opportunities for students, which allow for skill development that is transferrable across many contexts including professional knowledge dissemination and intrapersonal (e.g., accountability) and interpersonal (e.g., communication, eliciting compassion) skill development. In reflecting about their experiences, many students have expressed the value of these experiential learning opportunities (Cranston, 2019).

It is also necessary to garner human resources beyond the academic setting, such as program ambassadors from the YMCA site and program participants. We are mindful that reliance on one champion can be burdensome; thus, working to secure a small team of program ambassadors is ongoing and has been discussed in program advisory committee meetings. Finally, regarding financial resources, as a research team we are actively seeking financial resources to support these initiatives.

Limitations, Future Research, and Next Steps

This research worked to extend the literature in moving beyond the identification of facilitators and barriers of behavior-change maintenance and was one of the first studies to work with women to understand what tangible avenues would be valuable for ongoing support in working toward behavior-change maintenance. This case study can provide insight on how researchers can conduct community-engaged research, particularly using several characterizing traits outlined by Schinke, Smith, and McGannon (2013): localizing research practices, decentralizing academics, prolonged engagement, community capacity building, and project deliverables. Using multiple methods to collect data allowed for accessible opportunities and modes to share thoughts and insights related to the study's purpose that emerged based on participants' insights and experiences from the larger study. Specifically, the focus group enabled opportunities for dynamic dialogue exchanges among participants who provided insights that informed practices, as well as fostering the sense of individual and group empowerment (Sparkes & Smith, 2014). Adopting an action-oriented approach to integrate recommendations that emerged from this event into practice can help support health-related behavior-change maintenance for those at risk of developing T2D. Although the research team worked with participants to identify feasible initiatives to integrate into practice, they took a step back and continue to provide ongoing support to community members (e.g., coordination and promotion of activities, financial resources to support the initiatives). Such an approach has also helped integrate project deliverables (i.e., community-engaged initiatives) and build community capacity in both the general community (e.g., leading initiatives) and within the YMCA organization (i.e., staff skill development, addressing a gap in programming).

Despite the novelty of this study, limitations must be acknowledged. The knowledge-sharing event involved only 7% of total program participants at time of study and sought solely women's perspectives. Therefore, future research should continue to explore additional perspectives of supports for behavior-change maintenance, including those of men. Moreover, all study participants were White; the field would benefit from future research that explore individuals from diverse backgrounds (e.g., differing ethnicities, socioeconomic statuses, and education levels) to better understand how to best support the women beyond the current study (e.g., individuals facing barriers, individuals with lower physical fitness levels). Using a focus group as a method of data collection can have limitations regarding group think, hesitation to disclose personal or sensitive information, and/or domination of one or more participants (Mitchell & Branigan, 2000; Sparkes & Smith, 2014). In future, and to align with community-engaged research, having a trained community member facilitate the focus group may be valuable (Daley et al., 2010). Finally, data were analyzed and extracts chosen by the research team and not in direct consultation with the community. Despite involving community members in the communication of findings at local meetings and national conferences, future research should work to engage community members in all aspects of the research process (i.e., conceptualization, data collection and analysis).

Although diabetes-prevention programs such as the program of focus help initiate the behavior-change process, maintenance of behavior changes poses ongoing challenges. Women in this study discussed how specific ongoing supports were perceived as valuable in helping maintain these changes. Findings from the current study are similar to maintenance strategies that have been integrated into interventions for individuals at risk for T2D and/or cardiac rehabilitation, including drop-in sessions; regular text, e-mail, and newsletters from the study team; and periodic reviews and assessments with staff (Casey, De Civita, & Dasgupta, 2010; Penn, Dombrowski, Sniehotta, & White, 2013; Tulloch et al., 2013). Despite evidence indicating that the support strategies were used by participants postprogram and continued to raise awareness and accountability and facilitate behavior-change maintenance (e.g., Penn et al., 2013), research is advocated for initiatives that are autonomously driven and valued, as this is more likely to facilitate long-term maintenance (Samdal, Eide, Barth, Williams, & Meland, 2017). This study worked to address this gap by seeking insight from participants before developing strategies for maintenance support.

The desire of some women to be involved as program ambassadors speaks to this autonomous motivation. This finding is consistent with previous research in which women who engaged in a physical activity program discussed wanting to give back to the program and pursued various opportunities to volunteer with it (e.g., providing tours, leading clients to the exercise classes; Tava'e & Nosa, 2012). The women also encouraged their family and friends to join the program. The current study extends this work, whereby women spoke of being program ambassadors through facilitating some of the community-engaged initiatives (e.g., walking group, monthly meetings) and providing referrals to the program and to YMCA facility, but also working to raise awareness about prediabetes within their communities.

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Recognizing the value of the support strategies proposed by the women, as outlined above, many of the strategies have been implemented. Moving forward, we will monitor uptake of these community-engaged initiatives to explore reach and effectiveness, as this is a current gap in the field—we will continue to engage with past and present participants to elicit feedback on how else we can support them and whether the initiatives that we have in place are working in practice. The study team has one member present at each monthly drop-in meeting to hear feedback and discussions from the attendees, and a team member is monitoring the discussions on Facebook. This continuous monitoring and feedback will inform the implementation of further recommendations (e.g., program trainer office hours, peer mentoring) and delegation of human resources. Once we have secured additional human and financial resources to facilitate these community-engaged initiatives, the next step will be to implement and formalize the recommended peer-support mentorship program—the integration of peer mentorship has been shown to be effective at improving glycemic control (Piette, Resnicow, Choi, & Heisler, 2013). Scientifically evaluating the process of adding peer mentorship to the program in addition to participant (and mentee) outcomes will add to the peer-mentor literature to guide future diabetes-prevention programs housed in community organizations.

To formalize feedback and future implementation of efforts driven by the SBBC community, past participants are invited to join the participant advisory committee. The purpose of this committee is to provide an opportunity for researchers to learn from past participants and their experiences with the program and ongoing supports. These annual meetings seek to garner past participants' perspectives on what ideas they have to make the program, and postprogram support, more effective. The advisory group would also be an ideal platform to seek out men's insight. It has been well documented in the literature that social support is not used to an equal degree by men and women; men consistently use support less than women to deal with major life events (Taylor, 2011). Because of this, it is even more valuable to gain insight from this participant group on what types of support would be valuable to facilitate behavior-change maintenance.

Conclusion

Despite preliminary research that explored individuals' perspectives on making and maintaining behavioral changes in a exercise and diet intervention for T2D (e.g., Penn et al., 2013; Wycherley et al., 2012), this was the first qualitative case to explicitly explore women's perceived challenges and recommendations for how to best support them throughout and beyond immediate program delivery toward behavior-change maintenance. This research has and will continue to have direct practical implications at individual and community levels. Specifically, related to establishing peer support networks, monthly meetings continue to be held at the YMCA community site, where participants provide recommendations of topics and/or activities for the session; a weekly walking group is facilitated by two community members; and a closed Facebook group was created and is being used as an online community of practice and platform to other community initiatives (i.e., walking group, monthly meetings). In regard to creating platforms to communicate prediabetes-related information, a quarterly newsletter is being issued (virtually and in print) to stakeholders including community members. Community voice is sought out related to the content of these newsletters, including giving ideas for content, providing recipes, writing stories, and profiling program alumni or YMCA trainers. We have redesigned our program pamphlet that is distributed throughout the community, both at the YMCA and through community members advocating for the program through their networks. Finally, although no formal initiatives have been newly integrated to date related to providing ongoing trainer support, we committed to have one trainer present at each monthly meeting to provide opportunities to interact and check-in. We have also invited community members to join our existing participant advisory committee, where they can share their experiences and insights with program staff and the research team. As community capacity continues to build, we will work with the community organization (i.e., YMCA) and community members to continue to understand their support needs and integrate other initiatives (e.g., drop-in office hours, peer mentorship program). Together, we will work to ensure that human, material, and financial resources are available to support these initiatives well into the future. By incorporating valuable tools and strategies recommended by the women, this research will help inform future program planning and delivery of the SBBC program and can also inform other exercise and diet behavior-change programs offered in community organizations.

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