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Policy, Theory, and Social Issue Article

Small Steps Towards an Inclusive Diabetes Prevention Program: How Small Steps for Big Changes is Improving Program Equity and Inclusion

Community Health Equity Research & Policy
2025, Vol. 45(3) 227–236
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DOI: 10.1177/2752535X231189932
journals.sagepub.com/home/qch
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Abstract

Social determinants of health, the effects of colonialism, and systemic injustices result in some groups being at disproportionately higher risk for developing type 2 diabetes (T2D). Many T2D prevention programs have not been designed to provide equitable and inclusive care to everyone. This paper presents an example of the steps taken in an evidence-based community T2D prevention program, Small Steps for Big Changes (SSBC), to improve equitable access and inclusivity based on input from a stakeholder advisory group and the ConNECT Framework. To improve reach to those most at risk for T2D, SSBC has changed both eligibility criteria and program delivery. To ensure that all testing is done in an inclusive manner, changes have been made to measurements, and to training for those delivering the program. This paper also provides actionable recommendations for other researchers to incorporate into their own health programs to promote inclusivity and ensure that they reach those most at risk of T2D.

Keywords

prediabetic state, equity, behaviour change, community health

Key Messages

- Diabetes prevention programs must provide equitable, inclusive, and safe care to all, especially those at increased risk.
- Researchers can make programs more inclusive by critically thinking about their programs, decision-making processes, and measures.

Introduction

Increased risk of developing type 2 diabetes (T2D) is associated with lower income and education levels, unemployment, immigrant status, and being of African, South Asian, or Indigenous origins.[1–4] Not only are these groups at higher risk of developing T2D, but they also face many challenges when it comes to navigating healthcare systems. The stigma associated with T2D,[5] the mistrust of those working in healthcare,[6] and the costs associated with treatments[7] are only a few barriers that these individuals may face. While landmark diabetes prevention programs (DPPs)[8–10] have shown that adhering to a healthy diet and engaging in regular physical activity can decrease T2D risk, many were not designed with sustainability or implementation in mind, nor with consideration of equitable and inclusive delivery. DPPs need to be flexible, low-cost, community-based, and inclusive to those at higher risk of developing T2D to overcome the systemic inequities and barriers they face. A review of lifestyle modification DPPs highlighted that most DPPs are implemented in high-income countries, few focus on ethnic groups that are at greatest risk for T2D, and on average, DPPs included in the review lasted 23 weeks.[11] To address the incongruency between those at highest risk for T2D and those who participate in DPPs, we used the ConNECT Framework, designed to advance health equity within the field of behavioural medicine[12] and input from a stakeholder advisory group to make recommendations for changes to a community-based DPP, Small Steps for Big Changes (SSBC).

SSBC is an evidence-based, diet and exercise behaviour change counselling program for individuals at risk of

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developing T2D. SSBC consists of a training and follow-up phase. The training phase includes six brief one-on-one sessions which take place over three to four weeks. The follow-up phase includes check-ins and measurements at 1-, 6-, and 12-month post-training. Efficacy and preliminary program effectiveness have been demonstrated.[13–15] Individuals who completed the community-based program were highly educated (74.9% have college certificate or higher), female (70.9%), and White (85.2%; please note we reported "Caucasian" in Bean's paper,[13] but have since made changes to exclude the term "Caucasian" – see Table 1). Further, more than half of those who were eligible to participate in the community-based program and provided a reason as to why they chose not to, stated that it was due to geographical location because at the time SSBC was only offered in-person in Kelowna, British Columbia, Canada.[13] Despite the promising results of SSBC, there is a need to ensure that program delivery is flexible and inclusive to improve program reach and sustainability as SSBC scales up to rural and more diverse communities. Core intervention components and further details of the SSBC program can be found in Bean and colleagues' manuscript.[13] This paper aims to describe the ongoing and iterative changes to SSBC to improve inclusivity and equity based on the stakeholder advisory committee and the ConNECT Framework, and provide recommendations (see Table 1) for others to incorporate into their own community health programs. The stakeholder advisory committee included members of the SSBC research team and SSBC coaches, who met and discussed inequities and missed opportunities for inclusion within SSBC. The ConNECT Framework's principles (1. Integrating Context; 2. Fostering a Norm of Inclusion; 3. Ensuring Equitable Diffusion of Innovations; 4. Harnessing Communication Technology; and 5. Prioritizing Specialized Training) were then reviewed and used to provide additional actions to improve SSBC equity and inclusion.

To improve program accessibility, delivery of the core components was adapted to better implement SSBC across different communities and increase program reach. Specifically, SSBC made changes to eligibility, and program

Table 1. Recommendations to Developing an Inclusive Behaviour Change Intervention.

Recommendation	ConNECT principle	Action steps
Include end-users throughout	3	1) Develop advisory committees to aid in decision making; 2) form community partnerships; and 3) actively engage groups representative of all potential end-users when making program decisions
Use inclusive language	2	See appendix 1 for commonly used language and our suggested rephrasing
Ensure recommendations are economically accessible	1	Consider costs associated with recommendations to ensure all behavioural targets can be achieved regardless of client socioeconomic status
Identify "core" intervention components, which can be modified for different groups	3	Identify which aspects of the intervention are necessary and which are flexible. If possible, allow for flexibility with scheduling so that programs are more accessible
Include diverse promotional materials	2	Ensure there is diversity among individuals in promotional materials. Inclusion of diverse models within photos and videos will not only improve representation, but also stop perpetuating White as "the norm"
Provide cultural safety training for all program deliverers	5	Include: 1) cultural safety training for practitioners; and 2) weight bias training for practitioners
Do not provide arbitrary limits on eligibility criteria	2	Arbitrary limits on eligibility criteria (e.g., age, BMI) should not be used unless there is evidence that protocols are unsafe for specific groups
Sociodemographic questions should be asked with purpose and thought	2	1) Provide a brief explanation about the purpose of the sociodemographic questionnaires; 2) ask sociodemographic questions in an inclusive and safe way, with a variety of response-options; 3) list sociodemographic question options in alphabetical to reduce hierarchy in responses that might place historically privileged groups as the first response options; 4) avoid the option of "other" as it may make individuals who are not represented within response options to feel othered, and instead use wording such as "another option (please specify: ___)"; 5) offer response options such as "prefer not to answer" and "do not know"; 6) provide clients with choices in how certain measurements are taken to ensure that they feel safe and respected; and 7) use measurement tools that accommodate all individuals' shapes, sizes, and differences. See appendix 2 for suggestions on when and how to ask different sociodemographic questions

delivery and evaluation. All changes were made in consultation with potential end-users. We hope that this paper can serve as a tool to improve the reach and inclusivity of DPPs. While we do not believe that there are any specific skillsets, training, or education required to implement the recommendations in Table 1 and throughout this paper, we do believe that it is important to state our positionality. All four authors have post-secondary education and have received training related to implicit biases, equity, diversity, and inclusion. We acknowledge that our positionality and privilege influenced this paper and the recommendations in Table 1. We hope that our collaborative team approach, the use of the ConNECT framework, and input from the stakeholder advisory committee increases the chances that our recommendations can be implemented by individuals of diverse backgrounds and experiences. The remainder of this paper provides detailed explanation regarding how and why changes were made within SSBC and provides recommendations for other dietary- and physical activity-based behaviour change programs to improve inclusivity and equity.

Stakeholder Engagement

Development of a stakeholder advisory committee (SAC), patient advisory committee (PAC), and a formal partnership with the YMCA of Southern Interior BC[16] has ensured that SSBC has, and will continue to meaningfully engage with end-users. These committees meet twice yearly to discuss program processes and outcomes and provide feedback on the program. Including the SAC, PAC, and YMCA in the decision-making processes ensures that SSBC better meets the needs of all end-users, from those referring to and recommending the program (SAC), to those who deliver the program (YMCA), and those receiving the program (PAC).

SSBC Content

Diet and physical activity are key behavioural targets within SSBC. As such, we provide recommendations on *why* these behaviours influence T2D risk, and *how* clients can integrate these changes into their daily lives. However, these are complex behaviours that extend beyond the individual to their environmental context (i.e., does this client live in a food desert? Live near a gym?). Thus, we changed our recommendations. Rather than suggesting more expensive foods when discussing dietary changes such as avocados and nuts, clients learn about more affordable foods such as canned beans, legumes, and frozen vegetables that still fit within the complex carbohydrate, low-sugar guidelines.

In addition to dietary behaviour changes, increasing exercise in the form of either moderate- or high-intensity exercise is another main component of SSBC. Clients are provided with recommendations on how to exercise in a variety of settings without the need to purchase a gym membership (e.g., walking outdoors). Examples also include activities beyond Western ideas (e.g., dancing, food harvesting). These changes ensure that SSBC recommendations are attainable for clients of any income or cultural background.

Language is powerful and can shape thoughts, feelings, behaviours, and experiences. It is important to ensure that program materials and delivery uses inclusive and person-first language. Further, all language we use in SSBC strives to be more inclusive (see Appendix 1).

SSBC Program Delivery

Many DPPs require clients to take time out of their workday to attend several in-person sessions at local fitness, community, or health centers. This can be a barrier for people with limited flexibility.[17–19] DPPs that demand an intensive and rigid time commitment limit participation and exclude those who work long shifts, lack flexible transportation, or require childcare. To improve equity and reduce barriers to access, SSBC is offered to clients during all operating hours of the YMCA to accommodate a wider range of client availability. Additionally, SSBC changed the structure of the training phase from six sessions over three weeks, to four weeks.

The YMCA (SSBC delivery site) offers assisted membership to reduce the financial barriers for those choosing to attend the program in-person. Reach and accessibility of SSBC has been greatly improved by offering a virtual program option. Virtual sessions increase reach to individuals who (1) cannot travel during the workday but may be able to call in during a break; (2) live in rural areas without a YMCA facility nearby, and (3) are immunocompromised and wary of entering heavily populated fitness facilities. Additionally, allowing clients to call in for sessions by phone or video ensures that those without access to stable high-speed Internet are not excluded from participating.

SSBC Promotional Material

The promotional materials for programs send a message about what type of person is being targeted. SSBC promotional material includes a Web site, posters, pamphlets, a coach training Web site, and social media. Previously, photo and video content included current and past SSBC clients; however, SSBC clients to date represent a homogenous group, mainly consisting of White women. This homogenous group does not represent those at highest T2D risk. As such, we have increased diversity across promotional materials through targeted hiring of models. It is critical that SSBC is promoted as a program for people of all backgrounds and identities.

Train-The-Trainer

Cultural safety training is becoming more common in healthcare,[20] however, many health professionals still do not

receive such training.[6] Culturally safe care means that clients feel safe, respected, and like they have power in decisions.[21] There is extant evidence of stereotypes and biases that health professionals hold against Indigenous peoples in Canada and other equity-deserving and historically oppressed groups.[22–26] Negative healthcare experiences can result in equity-deserving groups avoiding Western medical treatment altogether.

SSBC mandates all coaches complete a program-specific cultural safety and inclusivity training module. The module was informed by existing healthcare provider resources[27–29] and literature on culturally safe and unsafe interactions,[30–32] and was developed by a multidisciplinary team.

Program Clients

DPPs often have strict eligibility criteria (e.g.,[33–35]). These criteria are important in testing clinical efficacy but can lead to inequitable access to when applied in translational DPPs purposed for improvement of public health. Limiting participation within DPPs also limits the generalizability of results.

Older adults and those with high BMI are often excluded from participating in DPPs (e.g.,[33,35,36]). Given that T2D risk increases with age, imposing such limits on participation can unnecessarily reduce the reach and representativeness of DPPs to those at highest risk. By increasing the age range of those eligible to participate in DPPs, this will improve program reach to those at higher risk. BMI is a commonly used measure of weight status; however, utility of BMI as a measure of obesity at an individual level is questionable.[37] Limitations of BMI are further supported by Obesity Canada's updated 2020 guidelines.[38] Using BMI as inclusion criteria provides little information about the contextual complexity of a patient and is problematic as BMI categories were originally developed based on predominantly White individuals, specifically males of European origins.[39] SSBC has greatly expanded age and BMI eligibility, within safety limits, to 18 years of age and older and no BMI limits.

Measurements

Measurements are necessary to ensure that a DPP is reaching the intended audience and is being implemented as intended, whilst making lasting health behaviour changes. Sociodemographic information can be useful in determining healthcare access and experiences, health inequities, biological differences, and the reach of studies. Often, sociodemographic variables are asked inappropriately or missed.

For all measurements in research, including sociodemographic measures, it is important to justify why and how questions are being asked, and decide a priori how data will be analyzed. To make programs more inclusive, it is critical to think about how the measures may be interpreted by clients and to make the measurements feel safe and inclusive.

Sociodemographics. Our research team takes the stance that it is important to be purposeful with the measurements that you choose to collect, but that it is necessary to collect sufficient sociodemographic information to be able to accurately report who participated in a study. Commonly, research participants are predominantly from historically privileged groups (e.g., middle-class, heterosexual, able-bodied, White in Canada and the United States), and attention is rarely drawn to participant demographics in manuscript titles and abstracts. Conversely, when a manuscript focuses on a historically oppressed group (e.g., African Americans), this is often explicitly stated in the title and/or abstract. Such reporting perpetuates the idea that privileged groups remain the norm and what works in these groups is the standard, and translations of the research can be implemented with "minority" groups. It is rare that a group of research participants, no matter how large the sample, is representative of society (race, ethnicity, sex, gender, sexuality, ability, etc.). Therefore, asking and reporting on sociodemographics can ensure transparency in who participated in a study, who was missing, and who this research can or cannot be generalized to.

SSBC measures will not be suitable for every research study, but we believe that they can be used to inform future research programs because of the steps we have taken to ensuring our sociodemographic questions are inclusive, safe, and purposeful. For example, it is important to differentiate terms that are sometimes used interchangeably but have different meanings (e.g., race and ethnicity; sex and gender). Being strategic in the order that options to sociodemographic questions are listed can reduce the historically inherent hierarchy within sociodemographic categories. Other recommendations can be found in Table 1, and examples of sociodemographic questions that we use are in Appendix 2.

Waist circumference. Waist circumference is an easily conducted measure which, in addition to weight and BMI, can provide a low-cost estimate of adiposity.[38] Previously, SSBC coaches were taught to instruct clients to expose the skin surrounding their waist for this measurement to be taken to comply with standardized guidelines. To be respectful of personal preferences and cultural practices, guidelines were modified to allow clients to choose whether the measurement is done directly on the skin or over light clothing. For clients who prefer video conferencing or phone sessions, coaches provide verbal and written instructions to clients on how to self-measure their waist circumference.

Measurement tools. In addition to ensuring that measures are inclusive and safe, it is of utmost importance that the tools used for physical measures are also inclusive. For this reason,

Table 2. Guiding Questions to Develop or Critically Appraise Existing Behaviour Change Programs.

Guiding question	Things to consider
Who is my target audience (i.e., who is identified as highest risk for developing T2D)?	Once a target audience has been identified, engage them in intervention design to ensure that you are creating an acceptable, inclusive, and equitable program. For example, do not design a program to be tested on undergraduate students who are not the target audience, call your program effective, then transplant it into other settings
What (if any) limits do I need to make on inclusion criteria?	Will adding limits to BMI, age, co-morbidities, etc. Reduce my ability to reach those at highest risk? If so, is there any justifiable reason to impose these limits? If there are not any justifiable reasons to include these limits, modify or remove them
What are my "core" evidence-based components of my intervention?	How can these components be delivered or modified in ways that are more accessible to all individuals? How can I work *with* end-users to tailor different components to meet their needs?
What are my indicators of success?	Key success indicators should not only include behavioural and clinical outcomes, but also whether you are reaching those most in need
What demographic and anthropometric outcomes do I want/need to assess?	Do I need sex, gender, race, or ethnicity data? What research questions do I want to answer with that data? Is it necessary for me to collect the data or can I have clients self-report if they are not comfortable with me taking the measurements?
How can I promote and present my program to the public (i.e., via social media or in peer-reviewed publications)?	What language and graphics can I use to make my knowledge dissemination/promotional materials more inclusive?

we use bariatric scales and measuring tapes. The weigh scales used in our program go up to 250kg. Similarly, measuring tapes for waist circumference measurements go up to 305cm. Simply joining a DPP and agreeing to research measures can be intimidating, so ensuring that the tools used in our program will accommodate everyone is imperative.

Discussion

With the recent passing of Bill C-237, reducing T2D risk is on the forefront of the Canadian healthcare system.[40] When developing this national framework for diabetes, designing preventative medicine to support improved access to health services for all Canadians was highlighted as a priority; however, existing DPPs have been designed, tested, and implemented in ways which exclude certain groups based on socioeconomic status. Given that all stages of behavioural research have the potential to exacerbate existing health inequalities,[41] care must be taken at the onset of intervention development to ensure that a DPP or other behavioral health intervention does not inadvertently exclude those most in need.

This paper outlined steps taken to improve the equity and inclusion of the SSBC DPP through use of a stakeholder advisory committee and the ConNECT Framework[12] and provided recommendations on how these changes can be integrated into other health promotion programs. The changes did not alter the "core" evidence-based components of the intervention but will likely result in improved program equity and can act as an exemplar for other programs. The recommendations provided within this document are not exhaustive and will be continually modified and refined based on new learnings and emerging research. We urge other behaviour change and DPP researchers to critically appraise their own programs to ensure that the decisions made do not arbitrarily exclude individuals in need of a program. When designing and implementing a community health program, reaching those who could benefit from the program the most, and promoting inclusion and equity should be priorities. Table 2 provides some questions that can guide the design and implementation when keeping these priorities in mind are.

Conclusion

Considering equity and inclusion in research programs might seem daunting, and take additional resources; however, this is an imperative step in advancing the fields of health promotion and behaviour change. Too often, those belonging to equity-deserving groups are an afterthought in designing and implementing health programs despite them being at higher risk for certain preventable conditions. There is a need for health programs and research to be more inclusive and equitable. This paper provides concrete steps, recommendations, and guiding questions to help researchers in navigating this tricky process.

Appendix 1

Use of inclusive language.

Commonly used language in the field	Suggested wording	Justification
Preventing T2D	Reducing risk for developing T2D	T2D is a multifaceted chronic disease which is influenced by genetic, behavioural, and environmental factors. By changing the emphasis from prevention to reducing risk, this takes the onus off the individual diagnosed with prediabetes and lessens the potential blame/fault on the individual
Husband/wife	Partner	Husband and wife are gendered, heteronormative labels. Many people may choose to not get married or feel that these labels do not align with their personal identity. By using the word partner, it is inclusive of more relationships and identities
Risk of T2D is higher in Indigenous peoples	Groups who have inequitable access to culturally safe health promotion programming have higher risk of developing T2D	The previous statement assumes that there is something inherent to being Indigenous that causes T2D, when the more likely cause is systemic racism leading to inequitable access to effective and safe healthcare
Diabetic, obese or overweight person	Individual with type 2 diabetes; Person with obesity or overweight	The previous term defines a person by a condition that they live with. Person-first language puts the person first and says that they have or live with the condition

Appendix 2

Sociodemographic questions – how should they be asked?

Sociodemographic question category	Suggested wording[a]	References
Sex	*What sex were you assigned at birth, meaning on your original birth certificate?* ○ Female ○ Male ○ Undetermined ○ Another option (please specify: ____) ○ Prefer not to answer *What is your current sex identity?* ○ Asex ○ Female ○ Intersex ○ Male *What is the sex category you currently use on administrative records/documents such as a driver's license?* ○ Female ○ Male ○ Another option (please specify: ___)	Adapted from Bauer and colleagues (2017)[42], and Reczek and Stacey (2022)[43]

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Sociodemographic question category	Suggested wording[a]	References
Gender	*Which best describes your current gender identity?* ○ Female or primarily feminine ○ Indigenous or other cultural gender minority identity (e.g. Two-Spirit) ○ Male or primarily masculine ○ Neither male nor female (e.g., gender non-confirming, gender fluid, non-binary, etc.) ○ Another gender (please specify: ____) ○ Prefer not to answer *What was your gender assigned at birth?* ○ Agender ○ Boy ○ Gender non-binary ○ Girl *How would you define your gender expression?* ○ Feminine (0-5 scale, with 0 being not at all and 5 being very) ○ Masculine (0-5 scale, with 0 being not at all and 5 being very) *How do other people see you?* ○ Feminine (0-5 scale, with 0 being not at all and 5 being very) ○ Masculine (0-5 scale, with 0 being not at all and 5 being very)	Adapted from Reczek and Stacey (2022)[43]
Race	*Do you identify as someone who is racialized, a visible minority, person of colour, or similar term?* ○ No ○ Yes ○ Prefer not to answer	Adapted from materials developed by Wray and colleagues for the "We ask because we care. The Tri-Hospital + TPH Health Equity Data Collection Research Project Report". (http://torontohealthequity.ca/wp-content/uploads/2017/05/We-Ask-Because-We-Care-Report.pdf)[44]
Ethnicity	*Which of the following best describes your ethnic origins? Select all that apply* ○ African ○ African American ○ Caribbean ○ Central American ○ East Asian ○ Eastern European ○ Western European ○ Indigenous (e.g., First Nation, Métis, and/or Inuit)[b] ○ Latin(x) ○ Middle Eastern ○ Oceania ○ South American ○ South Asian ○ Southeast Asian ○ Another option (please specify: ___) ○ Prefer not to answer ○ Do not know	Adapted from materials developed by Health Equity Office, Sinai Health System for the "Toronto Central LHIN Measuring Health Equity" project (torontohealthequity.ca)

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Sociodemographic question category	Suggested wording[a]	References
Disability	*Disability is defined by The Accessible Canada Act as "any impairment, including a physical, mental, intellectual, cognitive, learning, communications or sensory impairment – or a functional limitation – whether permanent, temporary or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person's full and equal participation in society."* *Do you identify as a person with a disability as described above?* ○ No ○ Yes ○ Prefer not to answer *If "yes", select the type(s) of disability that applies to you.* ○ Communications ○ Developmental ○ Dexterity ○ Flexibility ○ Hearing ○ Learning ○ Memory ○ Mental health related ○ Mobility ○ Pain-related ○ Seeing ○ Disability not listed above (please specify: ___) ○ Prefer not to answer	Adapted from the Accessible Canada Act

[a]While this is the wording we currently recommend; research and terminology may change over time making these recommendations outdated.
[b]This option is specific to the Canadian context and should be changed to include the Indigenous groups that are present in the area that the research is being conducted.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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Dr. Mary E Jung is an Associate Professor at UBC in the School of Health and Exercise Sciences at the University of British Columbia Okanagan Campus and the Director of the Diabetes Prevention Research Group (DPRG). Mary's passion is researching the self-regulation of health behaviours, primarily the promotion and adherence to physical activity and health diets in people living with, or at risk of, type 2 diabetes. Dr. Jung strives to see evidence-based lifestyle interventions implemented in the community to serve those in need.