A case study of a community-university multidisciplinary partnership approach to increasing physical activity participation among people with spinal cord injury

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Cite this as: *TBM* 2012;2:516–522
doi: 10.1007/s13142-012-0157-0

ABSTRACT

Over the past decade, increasing emphasis has been placed on the importance of health behavior change research being conducted in partnership with the beneficiaries of the intended research outcomes. Although such an approach should enhance the relevance of the research and the uptake of findings, it raises challenges regarding how best to cultivate and sustain meaningful partnerships to accomplish these goals. In this paper, we provide a case study of SCI Action Canada—a multidisciplinary team partnership approach to increasing physical activity among adults with spinal cord injuries. The research and knowledge mobilization phases are described. In addition, preliminary indicators of partnership success and key informant interviews are presented to highlight the challenges and opportunities associated with using a community-university partnership approach to influence positive health behavior change.

KEYWORDS

Exercise, Tetraplegia, Quadriplegia, Community-based research, Sports, Disability, Knowledge mobilization

INTRODUCTION

Persons with physical disabilities are at greater risk than able-bodied individuals for inactivity-related chronic diseases (e.g., heart disease, diabetes, and obesity; [1]), and yet, there have been virtually no systematic efforts to promote physical activity in this segment of the Canadian population [2, 3]. Looking across disabling conditions, persons who have sustained a spinal cord injury (SCI) are among the most likely to be physically inactive [2]. Of the estimated 85,000 Canadians living with SCI [4], 50 % report no leisure-time physical activity whatsoever [5]. Indeed, the SCI Community has been referred to as one of the most inactive segments of all society [6].

Because people with SCI face so many barriers to physical activity [7], their low levels of participation are not particularly surprising. However, overlooking physical inactivity in the SCI Community

Implications

Practice: Multidisciplinary, community-university partnerships can be highly effective in translational behavioral medicine when they are established at the project planning stage and fostered throughout the research production and translation/mobilization stages.

Policy: Resources should be directed towards cultivating community-university partnerships in order to optimize the development and implementation of evidence-based tools and services.

Research: Multidisciplinary, community-university partnerships that systematically link research activities with the translation of new knowledge into products and services can be used to address complex problems in behavioral medicine, such as physical inactivity among persons with disabilities.

represents a lost opportunity to improve health and well-being. In studies of people with SCI, modest amounts of exercise (two to three sessions per week) have been shown to significantly improve physical fitness [8]. Leisure-time physical activity (LTPA) (e.g., sports and exercise) may also reduce the risk for obesity [9, 10], heart disease [9, 11], type 2 diabetes [9, 12], and secondary health problems [13]. Furthermore, there is evidence that LTPA improves psychological well-being [14], performance of daily life activities [15], and overall quality of life [16] in this population. Given these vital benefits, attention is needed to address the low rates of physical activity among persons with SCI.

As in the general population, the SCI inactivity problem is complex and reflects a wide variety of personal, social, and environmental barriers [17, 18]. Such a multifaceted problem begs a multidisciplinary solution. From a research perspective, research across disciplines (e.g., exercise physiology, exercise psychology, rehabilitation science, and public policy) is a key to determining the most effective ways to address individual and systemic barriers. Likewise,

from a population health perspective, the promotion of physical activity in the SCI Community is not the sole responsibility of any one entity or organization. For instance, government ministries can help improve accessibility by developing appropriate policies [19]. Service organizations have a role to play in terms of disseminating informational and behavioral interventions. Health care professionals can play a significant motivational role by prescribing physical activity and counseling their patients to be active [20, 21]. As suggested by these examples, through a multi- and interdisciplinary approach at the community level, the likelihood of community-wide physical activity behavior change becomes plausible.

In order for community physical activity interventions to have impact, they must achieve reach, efficacy, adoption, implementation, and maintenance (RE-AIM) [22, 23]. These targets cannot be met without integrated, multi-, and interdisciplinary community and research expertise. For example, it is very difficult for researchers to reach the SCI Community and to implement evidence-based physical activity interventions without the expertise and credibility of key community partners who have already established programs and activities to facilitate communication and implementation. Likewise, community organizations' attempts to promote physical activity are often hindered by a lack of program efficacy and adoption. Researchers' expertise in developing theory- and evidence-based best practices for physical activity interventions can help to address these barriers. Finally, the maintenance of community-based interventions requires the joint expertise of academics to develop strategies to help people maintain behavior change and the buy-in of community partners to sustain programs that support change. In short, the goal of promoting physical activity in the SCI Community cannot be achieved without integration of academic and community-based expertise from multiple disciplines.

THE OPPORTUNITY

One of Canada's federal granting councils, the Social Sciences and Humanities Research Council (SSHRC), offered funding for a Community-University Research Alliance (CURA). The purpose of this program was to create alliances between community organizations and universities to foster new knowledge, tools, and methods that would address problems of social significance in Canadian communities. Importantly, the CURA program stipulated that a significant proportion of grant funds be devoted to *knowledge mobilization*.

SSHRC defines knowledge mobilization as “the act of moving research results into the hands of users.” (The Canadian Institutes of Health Research refer to this activity as “knowledge translation,” whereas the National Institutes of Health refer to it as “dissemination and implementation;” to remain consistent with our funder, we use the term

“knowledge mobilization” throughout). The “moving” aspect referred to in SSHRC's definition of knowledge mobilization can be accomplished through a variety of mechanisms such as publications, presentations, and electronic media. However, in the present context, the challenge of knowledge mobilization is to move research results beyond professional and academic users and into the hands of people who need it most—people with SCI, who need to become more physically active. Meeting this challenge requires repackaging research findings so that they can be used by a particular audience and selecting the optimal delivery mechanisms to enhance uptake. Thus, the essence of knowledge mobilization is getting the right information to the right people in the right format at the right time. An example of a physical activity-related knowledge mobilization strategy for a general audience is synthesizing research findings into physical activity guidelines and disseminating these through the internet. An example for a professional audience is developing new physical education curriculum and training teachers to deliver it.

SCI ACTION CANADA

In 2007, our multidisciplinary team was awarded a 5-year CURA grant. Branded as *SCI Action Canada*, our original team consisted of 7 community partners and 12 researchers from 7 Canadian universities. Over the past 5 years, our community partnerships have increased to 16 organizations (one original partner organization disbanded in 2008 and is not included in this tally), and our research partners now number 15 investigators from 8 Canadian and 1 British university.

A complete list of community partners is available at www.sciactioncanada.ca. Partners represent the major national and provincial service organizations for people with SCI [Spinal Cord Injury Canada (formerly Canadian Paraplegic Association)—Ontario and Alberta Chapters], other nongovernment organizations supporting people with SCI (e.g., Ontario Neurotrauma Foundation and Rick Hansen Foundation), and the primary sports and recreational organization networks for people with disabilities (e.g., Canadian Paralympic Committee, Active Living Alliance for Canadians with a Disability, and Canadian Wheelchair Sports Association), along with local, state-of-the-art providers of physical activity programming for people with SCI (e.g., MacWheelers, Hamilton ON; Revved Up, Kingston ON). Partnerships also exist with the Ontario government and ParticipACTION for purposes of knowledge mobilization through public policy. Collectively, these partner organizations provide a systemic, multidisciplinary network of avenues for representing and reaching people with SCI.

The researchers represent a multidisciplinary team with expertise spanning exercise science,

behavioral science, rehabilitation science, statistics, and psychology (see www.sciactioncanada.ca for partners and their expertise). Given the complexity of the physical inactivity problem, the need for additional disciplinary expertise has arisen during specific projects. This need has given the opportunity to expand our core team to include experts from other disciplines such as medicine, program evaluation, adapted physical education, and epidemiology (e.g., [24]). There are also a diverse group of professionals (e.g., knowledge translation specialists, technical writers, and graphic designers), people with SCI (working, for example, as bloggers and peer mentors), advocates, and staff who have been hired to work on various projects.

SCI ACTION CANADA MISSION AND OBJECTIVES

Our mission and objectives were established at a team meeting during the grant preparation stage (December 2006). SCI Action Canada's mission is to develop and mobilize strategies that will inform, teach, and enable people living with SCI to initiate and maintain a physically active lifestyle. Accordingly, our activities are designed to meet the objectives of *developing* theory- and evidence-based interventions and *mobilizing* and *evaluating* the impact of these interventions in the SCI Community. At the team meeting, partners also committed to community-based participatory research principles of co-learning and sharing of expertise, shared decision making, and mutual ownership of the research process and products [25, 26].

METHODOLOGICAL APPROACH AND THE ROLE OF THE PARTNERSHIP

Typically, knowledge mobilization activities are considered only *after* a research project is completed (i.e., “end-of-grant knowledge translation;” [27]). However, given the centrality of knowledge mobilization to our objectives and SSHRC's funding mandate, we embedded knowledge mobilization research into our research program (i.e., “integrated knowledge translation;” [27]) in order to determine the strategies for maximizing our potential impact and reach. Research activities were systematically linked with the translation of new knowledge into products and services for dissemination to the SCI Community. These linkages were achieved by ensuring that community and university partners worked together in all stages of activity and by structuring our research program around five principles of effective research knowledge mobilization [28, 29]:

1. *Principle 1: Know your audience and the issues.* This principle was addressed through systematic [8] and scoping [21] reviews of relevant literature and resources [30], along with studies of social cognitive predictors of physical activity in

Canadians with SCI [31, 32] and the needs and availability of informational and other physical activity supports [33, 34]. We also examined community capacity for delivering physical activity interventions [35].

2. *Principle 2: Identify credible messengers.* Principle 2 was addressed through a scoping review [21] and focus group study [20] designed to identify individuals and organizations considered to be preferred and credible sources of physical activity information, from the perspective of persons with SCI.

Projects addressing principles 1 and 2 were primarily researcher driven. The community partners were engaged in various ways, including acting as key informants, providing source documents, and expanding the partnership network.

3. *Principle 3: Create audience-specific messages and practices.* Studies addressing principles 1 and 2 provided the evidence base for activities related to principle 3. Based on what we had learned about the community's needs and preferences, we developed and tested a variety of resources and interventions such as evidence-based SCI physical activity guidelines [24] and a Get Fit Toolkit [36], SCI-specific messages promoting physical activity [37], a peer-delivered intervention to increase home-based strength training [38], a motivational interviewing intervention to bolster intentions to be active [38], and a group-mediated cognitive behavioral counseling program to increase independent exercise [39]. We also successfully translated two randomized controlled trials [40, 41] showing the efficacy of telephone-based physical activity counseling for people with SCI, into a national service program (Get in Motion; <http://www.sciactioncanada.ca/get-in-motion.cfm>).
4. *Principle 4: Select effective methods for conveying messages.* We selected knowledge mobilization methods to target people with SCI and health care professionals. Professionals were targeted, given our findings that people with SCI want to receive physical activity information from this group [20, 21]. Some methods leveraged existing programs and opportunities available through community partners; for instance, integration of the SCI physical activity guidelines into partners' educational programs for health care professionals and trainees and sending Get Fit Toolkits in partners' mailouts. Other methods sparked new community partner initiatives, such as community-based physical activity workshops and the creation of an educational video. Additional methods included registry of the guidelines with the Canadian Medical Association, layperson research summaries, training videos, blogs, and downloadable resources on our website.

While carrying out the projects for principles 3 and 4, the partnership became increasingly

symbiotic. Researcher-led initiatives integrated community partners in key research and knowledge mobilization decision-making processes. Knowledge mobilization plans were developed through joint meetings between researchers and community partners. For instance, community partners participated in the multidisciplinary consensus panels that led to the development of the physical activity guidelines [24] and Get Fit Toolkit [36], as well as the design and delivery of the peer-based intervention [38]. In turn, community partners began to invite researchers to support their resource development activities. For example, some community partners sought multidisciplinary research expertise in exercise physiology, pedagogy, and behavioral science when developing content for national educational initiatives.

5. *Principle 5: Evaluate the effectiveness of knowledge mobilization methods.* The RE-AIM framework serves as the basis for evaluating our knowledge mobilization activities. We are currently evaluating the impact of some specific programs (e.g., Get in Motion) as well as the overall SCI Action Canada initiative. Teams of researchers and partners designed the evaluation protocols and established performance indicators (e.g., number of toolkits disseminated, percentage of Get in Motion clients who become active, and number of provinces with educational programs). As a testament to the strength of the partnership, one community partner revised how its organization reports certain types of data in order to facilitate the evaluation. Data collection is currently underway and will continue until the end of 2012. Some preliminary results are presented in the next section.

INDICATORS OF SUCCESS

Preliminary data clearly indicate that our multidisciplinary partnership has extended the reach of our knowledge mobilization activities beyond what could be achieved by researchers from any single discipline working in isolation. Indeed, prior to establishing our partnership, our research team considered it a success if an intervention reached 50 people with SCI (e.g., [37, 40, 41]). As of July 15, 2012, the reach of SCI Action Canada resources and services has far surpassed that modest benchmark. For instance, 10,000 Get Fit Toolkits have been directly mailed to Canadians with SCI and people who support them. The SCI physical activity guidelines have been viewed nearly 6,000 times on our website, in 90 different countries. Over 800 health care professionals, service providers, and trainees have attended educational seminars on SCI and physical activity. The Get in Motion service has provided physical activity counseling to over 115 clients. Furthermore, the partnership has facilitated reach beyond individuals with SCI and health care

professionals, to home-support workers, public health and sport policy makers, and lawyers who advocate for the SCI Community.

In large part, we attribute these “reach” successes to having fostered a commitment to knowledge mobilization very early in our program. Consequently, research and community partners worked together to ensure that meaningful research was being generated to meet the partnership's overarching objectives, and community partners had influence over the types of products and services generated during knowledge mobilization activities. As the partnership relies heavily on the community organizations to facilitate knowledge mobilization, this approach ensured that the community partners saw value in the tools and resources that they would ultimately disseminate.

In addition to tracking our partnership's successes in terms of measurable outputs, one of our community partners initiated an informal interview process to capture the insights gained through the collaboration. The third author (SC) interviewed the majority of team members to identify perceived successes, challenges, and lessons. The main themes were identified based on a combination of quantitative (frequency of repeated themes) and qualitative analyses (language and emphasis used to describe the importance of the theme). The findings are summarized below and are presented as recommendations for developing and managing multidisciplinary teams to create and translate evidence-based interventions into real-world practice.

PARTNER PERSPECTIVES: CHALLENGES, OPPORTUNITIES, AND LESSONS LEARNED

1. Find and engage team champions. Almost all team members were of the opinion that the success of a multidisciplinary partnership hinges on having research and community leaders that are committed to collaboration. “The principle investigator is the driving force behind the number of partnerships that have been successfully formed,” said one member. “Obtaining community-based leadership from the beginning is also critical.” One trainee acknowledged that “having one main champion (from a partner organization) at the table is great—he is our main conduit to his organization and works behind the scene to get the right people on board. He also keeps his boss informed and involved, and this has turned into longer term organizational commitment.”
2. Be open to everyone's needs. Although team members share a common, unifying vision, individuals and organizations come to the table with their own specific objectives and needs. In a multidisciplinary partnership, it is important to acknowledge and make efforts to address those needs. For instance, one community organization wanted to use their involvement as a way to systematically access and apply more research

evidence regardless of the topic: “Community agencies have been accused of not being evidence based. This gives us the evidence and benchmarks for future evaluation...we are building capacity through leveraging research partnerships.” For community groups, access to funds for student employment was also very welcomed. “The researchers within the team did not keep money for themselves but shared resources to help with our end of the work. This helped to maximize the collective investment.”

3. Learn together. It is important to recognize and appreciate the strengths each member possesses within a multidisciplinary context and be open to testing new ways to influence change together. One research trainee observed about a particular community partnership that “we’re willing to invest and so are they. It is not just a push of information—we are figuring out together how to best disseminate guidelines and messages.” The main community contact for that partnership agreed, stating “the great legacy here is that it helps our organization do knowledge mobilization regardless of the topic. It showed me how effective research partnerships can be—it is not just about knowledge dissemination but implementing interventions into existing services.” Another trainee remarked: “Give and take on both ends is needed to make it work—community organizations bring such tremendous reach that researchers could not find on their own.”
4. Be Patient. Good partnerships take time to develop. Many of the galvanizing moments in our partnership occurred when partners transitioned from having vague responsibilities to tangible tasks for specific projects. The knowledge mobilization leader reinforced this point by saying that “the first meeting between researchers and community partners was like a high school dance with the boys and girls sitting on separate sides and not interacting, and despite the fact that everyone came to dance, no one knew how to get started. Regardless of our intentional methods to push integration, it was only when specific tasks were identified that people started to interact.” Interestingly, one of the challenges noted by many team members was the different timelines held by researchers and community partners. One researcher noted that “researchers tend to work faster because there are only a few of us versus trying to get a large organization to change.” However, a community partner also spoke about the challenge of timing and said that she was surprised how long research projects took to complete, and specifically, how cumbersome and time-consuming ethics approval seems to be.
5. Strive to seek common language. Many team members expressed frustration about language. Ensuring terms that were used consistently and understood was a challenge that needed constant

attention during team meetings. One researcher commented: “Originally, I was frustrated with the different terms, theories, and narrow view of knowledge mobilization. But then, I started using more common language on what we were actually trying to do, and that improved communication.” One community member stated that, at first, the term knowledge mobilization did not mean much to her work, but when she realized, it was just a way to say that “using research to influence positive change among the people she sees who have a spinal cord injury,” then, she was comfortable with the term.

6. Recognize other indicators of success. It is important to capture all outcomes that arise from a multidisciplinary collaboration. One of the funding agency’s goals and a goal for this particular project was to foster students’ education and skill set; this element proved to be extremely successful. Comments from trainees playing key roles in the project include: “It is great to have students involved—I feel we are equal members of the team, and our ideas are welcome—also good to involve people while they are young. This is a tremendous opportunity for me. As a researcher, I now really think about how best to do knowledge mobilization from the very beginning of a grant. It is more than just presenting at conferences. It is a great experience to see the results turned into action—it makes me a better researcher and knowledge mobilization person.” Another student stated: “I knew nothing about how to translate research into practice, and now with this experience, I want to do this type of research.”

CONCLUSION

SCI Action Canada is a multidisciplinary partnership of researchers and community organizations that have come together with the common goal of advancing physical activity knowledge and participation among people living with a spinal cord injury. Over the past 5 years, the team has: (1) produced innovative and impactful research, (2), translated that research to usable and relevant products and services, and (3) mobilized these products and services to increase knowledge uptake and behavior change within the SCI Community. Although the full impact of SCI Action Canada initiatives is currently under evaluation, our resources and initiatives have already reached over 10,000 Canadians living with SCI and the people who support them. We have also reached thousands of international website visitors. These knowledge mobilization successes are largely attributable to having created a program that links research and knowledge mobilization while fostering ongoing collaboration between community and university partners. This article has also highlighted lessons

learned from a multidisciplinary team-oriented approach to translational behavioral medicine. The most important lesson is that multidisciplinary partnerships can be used to address complex problems in behavioral medicine, in our case, developing and mobilizing strategies to inform, teach, and enable people living with SCI to initiate and maintain a physically active lifestyle.

Acknowledgments: This project was supported by a Community-University Research Alliance (CURA) grant from the Social Sciences and Humanities Research Council (SSHRC) of Canada. We extend our appreciation to Adrienne Sinden for her assistance with the preparation of this manuscript.

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