

Research paper

Promoting the health of vulnerable populations: collaborative research strategies

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ABSTRACT

The investigation of complex factors underpinning disparities necessitates the collaborative expertise of diverse disciplines and partners in practice and policy domains. Research collaborations play a critical role in informing practice, programmes and policies that reduce health disparities and promote the wellbeing of vulnerable populations. In this paper we present interdisciplinary initiatives in our research programme that engages academics from different disciplines, community and policy partners and vulnerable people under study. Diverse perspectives foster comprehensive, multidimensional analysis of the support and health needs of vulnerable

groups, and the multisite research strategies that we use enable methodological diversity, expeditious data collection and larger sample sizes. The purpose of the paper is to present our positive experiences with this collaborative model. We focus on contributions and challenges pertaining to leadership, communication, co-ordination, knowledge translation and mentorship.

Keywords: collaboration, disparities, interdisciplinary, participatory, research programme, social support

Introduction

The past two decades have witnessed a shift towards partnership in tackling the broad determinants of health inequalities through interdisciplinary and cross-institutional research (Duncker, 2001; Evans,

2003; Heenan, 2004). Forces propelling the move towards collaboration include the need for new solutions to complex challenges, the emergence of research problems that no single discipline (Hviding, 2003) or sector (World Health Organization (WHO),

1978; Health Canada, 1998; Brown *et al*, 2006) can solve. New approaches to achieving health are based on collaborative relationships among policy, public, voluntary and community sectors (WHO, 1998; WHO Europe, 2004). Such interdisciplinary relationships (see Box 1) can reduce the costs associated with system reform (McCallin, 2001) and enhance service quality (Bradshaw, 2000; Irvine *et al*, 2002), because priority problems inevitably cut across disciplines (Schoenberger, 2001; Arriola *et al*, 2001; Hviding, 2003; Boydell and Volpe, 2004). Alliances among researchers, policy makers, practitioners and the public can build capacity to reduce disparities (Beiser and Stewart, 2005). Collaboration (see Box 1) assumes many forms. Interdisciplinary university teams can combine strength and expertise with community agencies or lay people using participatory action research (Roos and Lombard, 2003; Kelly *et al*, 2004). Other multi-organisational collaborations occur between and among academic institutions and service agencies (Arriola *et al*, 2001; Frame *et al*, 2002) and service providers (Bradshaw, 2000). In spite of the benefits of interdisciplinary and intersectoral collaboration, barriers persist (Lehmann *et al*, 2004). Research is required to develop the knowledge base for more effective interdisciplinary collaboration. The purpose of this paper is to bridge gaps in the knowledge base on interdisciplinary collaborative strategies (cf. Hall *et al*, 2006) using the example and experience provided by our research programme, which has forged links with policy makers, managers and service providers in studies on social support for vulnerable groups experiencing diversity and inequality. In the first part of the paper we outline the programme itself and explain how it is put into practice. The paper then moves on to present a discussion of the strengths of the programme and challenges that have arisen for us.

Box 1 Key definitions

- *Interdisciplinarity* is the meshing of epistemological, methodological and institutional boundaries between disciplines (Hviding, 2003).
- *Collaboration* is the process through which a group of diverse actors undertakes a joint initiative to address shared concerns or achieve common goals (Fear and Burnett, 2003).

Enabling the environment for collaboration

As health problems are tied to broad social factors, intersectoral collaboration is essential (WHO Europe, 2004; Brown *et al*, 2006). Complex or multifaceted

health and health services problems and the varied societal elements that influence them, such as gender, ethnicity, education, income and disability, require interdisciplinary strategies (Giacomini, 2004; Beiser and Stewart, 2004; Rhoten, 2004; Reutter *et al*, 2005; Armstrong, 2006; Hall *et al*, 2006). Policy initiatives have institutionalised collaboration between government, institutions and private spheres in the UK (Whitehead, 2001), Ireland (Heenan, 2004), the US (Arriola *et al*, 2001) and Canada (Health Canada, 1999). Globally, collaborative partnerships have become central for researchers, theorists, practitioners and policy makers interested in reducing health disparities (Arriola *et al*, 2001; Evans, 2003; Heenan, 2004; Brown *et al*, 2006). Other driving factors include measurable outcomes, continuity and cost containment (McCallin, 2001; Irvine *et al*, 2002).

The increased interest in collaborative research strategies among public and private funding agencies (Hviding, 2003; Boydell and Volpe, 2004; Giacomini, 2004) in Canada and other countries has translated into increased funding for partnered teams (Rhoten, 2004; Hall *et al*, 2006), and collaboration as a condition for support (Lasker *et al*, 2001; Fox-Wasylyshyn *et al*, 2005; Hall *et al*, 2006). These external environmental factors have played a central role in the dramatic increase in collaborative initiatives.

Social Support Research Program: purpose and scope

Our Social Support Research Program (SSRP) was initiated in 1998 to assess social support as a health determinant and protective factor (see Box 2 for the programme objectives). The programme focuses on designing, implementing and testing support interventions targeting vulnerable families, groups and communities using innovative mechanisms. The programme's intervention research provides practical solutions for service delivery models that are culturally and diversity sensitive. Outcomes addressed include the impact of social support interventions on health, functioning and resilience. Because the SSRP focuses on one social determinant of health, that is social support, in relationship with other determinants of health, the social support framework is used in all projects (Stewart and Langille, 2000).

Collaboration in this research programme occurs at five different levels. First, individual projects are conducted by teams of investigators representing many disciplines (see Table 1). Second, interdisciplinary collaboration among investigators spans different academic institutions. The majority of projects engage investigators across the country or province, yielding

Box 2 Key objectives of the Social Support Research Program

- To create a multidisciplinary, multisite programme of research focused on social support as a health determinant and protective factor
- To assess the mechanisms by which social support exerts an impact on health status, health behaviour, and health services use
- To investigate the links between social support and other key determinants of health, specifically socio-economic status, culture and gender
- To examine the role of social support as a protective factor for vulnerable families, groups and communities
- To design and implement support interventions targeted at vulnerable families, groups and communities using innovative mechanisms and modalities
- To test the impact of support interventions on health, functioning and resilience outcomes
- To identify implications of the research for programmes and policies in health and health-related sectors

multisite collaborations. Third, research is developed by interdisciplinary teams in collaboration with community partners, lay people and professionals. The professional (Fox-Wasylyshyn *et al*, 2005) and experiential (Hviding, 2003) knowledge of these partners is crucial and helps to guide project design. Fourth, we conduct research *with* participants, not *on* them. In the tradition of participatory research approaches (Israel *et al*, 1998; Lantz *et al*, 2001; Reutter *et al*, 2005), the emphasis on gaining the perspectives of participants on support needs, preferences and barriers is evident in every study. Finally, our teams collaborate with agencies/organisations in programme and policy arenas interested in alleviating or preventing the effects of inequities affecting diverse vulnerable groups. For example, in studies 1 and 4 targeting poverty (see Table 1), the Canadian Mental Health Association, Canadian Policy Research Networks, National Anti-Poverty Organisation and Canadian Public Health Association entered the alliance.

This collaboration is enacted through a number of different activities and strands: team building, leadership, co-ordination, communication, methodological diversity, dissemination of findings and training and mentorship. Each is discussed below.

Team building

Investigators

The research programme consists of a core multidisciplinary team of researchers from nursing, anthropology, public health science and rehabilitation medicine. Academic investigators collectively have varied disciplinary backgrounds (see Table 1). In each project, the principal investigator and one or more core members of the SSRP take the initiative to seek investigators with similar interests in Canada. Conversely, investigators from other institutions approach programme investigators with potential research topics. Two important elements of these collaborative studies are the selection of persons who can work together on a common research agenda (Woods *et al*, 2000), and have prior experience working with each other (Israel *et al*, 1998; Bourdages *et al*, 2003). The maximum number of investigators in any team, except for project 1, is 10 (see Table 1). Other authors confirm the benefit of small and enduring teams (Giacomini, 2004) for facilitating meetings and the equitable division of labour, and avoiding protracted decision making (Fox-Wasylyshyn *et al*, 2005).

Organisational structures

The university administrative structures are highly supportive of interdisciplinary collaboration, as are other Canadian universities where co-investigators are located. Universities provide space for meetings and interviews, storage and work areas for staff, and the support of institutional administrators is vital for advancing the purposes of interdisciplinary health research (Hall *et al*, 2006).

Community partners

Investigators extend invitations to non-academic persons, usually representatives from partner organisations and practice settings, or professionals engaged in an intervention, to become co-investigators (see Table 1). We have established long-standing partnerships with policy decision makers, service providers, programme planners and advocacy groups at local, provincial and national levels. Investigators on each team approach community partners from relevant non-governmental and public agencies to explore their interest in a proposal before the launch of a study. In project 1, the research was initiated by community members (Reutter *et al*, 2005; Table 2), representing an ideal case of a participatory community-development initiative (Israel *et al*, 1998; Lantz *et al*, 2001).

Continuity of collaborative relationships

Investigators and community partners who have collaborated previously usually develop new studies.

Table 1 Social Support Research Program (SSRP) studies

SSRP research studies	Research team members	Disciplines	Research staff#		Collaborating institutions/ organisations	Collaborators	Community partners*	CAC**
			Student	Postgraduate				
<p>1 Low Income Consumers' Perspectives on Determinants of Health Services</p> <p>Use: examined factors influencing the use of health and health-related services by people living in poverty. (Funded by: Alberta Heritage Foundation for Medical Research (AHFMR), Boyle McCauley Health Centre, Canadian Health Services Research Foundation, Edmonton Community Lottery Board, Health Canada, United Way)</p>	10 academic and 2 non-academic	Nursing, medicine, nutrition science, health policy, public health, consumer economics, family studies, sociology	4	2	SSRP (University of Alberta), University of Toronto	N/A	25 (across 2 sites)	17 (across 2 sites)
<p>2 Telephone Support for Family Caregivers of Seniors with Chronic Conditions: tested the impact of dyadic telephone support from experienced family caregivers to vulnerable family caregivers of seniors with stroke and with Alzheimer's disease. (Funded by: AHFMR, The Capital Care Group)</p>	5	Nursing, rehabilitation medicine, occupational therapy	2	6	SSRP (University of Alberta)	1 (statistician)	3	N/A
<p>3 Left Out: Perspectives on Social Isolation and Exclusion in Low Income Populations: this study examined the impact of socio-economic status on selected dimensions of social cohesion and strategies for enhancing inclusion and belonging for those in poverty. (Funded by: Social Sciences and Humanities Research Council (SSHRC))</p>	6	Health policy, nursing, sociology, psychology, geography, statistics	9	6	SSRP (University of Alberta), University of British Columbia, University of Toronto, York University	1 (statistician)	14 (across 2 sites)	10 (across 2 sites)

Table 1 Continued

<p>4 Multicultural Meanings of Social Support Among Immigrants and Refugees: meanings of social support for immigrants and refugees were examined, as well as the types and adequacy of their formal supports. (Funded by: SSHRC)</p>	6	Anthropology, nursing, epidemiology, sociology, psychiatry	5	15	1	27	25 (across 3 sites)
<p>5 Online Support for Adolescents with Disabilities: this project tested an innovative online intervention designed to overcome the geographic and physical barriers faced by adolescents with disabilities. (Funded by: CIHR, AHFMR)</p>	5	Nursing, occupational therapy, psychology, social work	9	N/A	2	N/A	
<p>6 Support Intervention for Homeless Adolescents: this project pilot-tested a peer and professional mentoring intervention for homeless youth designed to meet support preferences identified in earlier interviews. (Funded by: AHFMR and United Way)</p>	3	Nursing, sociology	2	1	3	11	
Currently funded/in progress							
<p>7 Support Intervention for Low Income Women Smokers: The Low Income Women Smokers project is a support intervention that responds to the needs and support preferences of low-income women smokers. (Funded by: SSHRC, AHFMR, Alberta Alcohol and Drug Abuse Commission (AADAC))</p>	4 academic and 1 non-academic	Nursing, sociology, anthropology	3	6	24 (across 3 sites)	10 (across 3 sites)	

Table 1 Continued

SSRP research studies	Research team members	Disciplines	Research staff#		Collaborating institutions/ organisations	Collaborators	Community partners*	CAC**
			Student	Postgraduate				
<p>8 Supporting Mother–Infant Relationships Affected by Post-partum Depression: the aim of this study, conducted in both Alberta (urban) and New Brunswick (rural), is to try and bridge the gap between depressed mothers' support needs and services available to meet those needs. The ultimate goals of the intervention are to support: (1) mothers' recovery from post-partum depression, (2) healthy parent–child relationships and (3) child health and development. (Funded by: CIHR, March of Dimes)</p>	7	Nursing, education	1	1	University of New Brunswick, SSRP and Women's Health Research, University of Alberta		10	
<p>9 Finding Firmer Ground: Support Intervention Preferences of Immigrant Seniors: this project is assessing the social support resource needs and preferences of immigrant seniors. (Funded by: Canadian Heritage, AHFMIR)</p>	2 academic and 3 non-academic	Nursing, anthropology, sociology, education, human ecology	1	1	SSRP (University of Alberta)	1 (community service provider)	7	6

Table 1 Continued

<p>10 Successful Models of Knowledge Translation and Peer Support for Building Capacity for Children with Asthma and Life Threatening Allergies in Rural and Urban Communities: this study will assess the need for a support intervention for older children with asthma and/or allergies. (Funded by: AllerGen)</p>	7 academic and 2 non-academic	Nursing, medicine, education, social policy, social work, health geography	N/A	2	SSRP (University of Alberta), Alberta Asthma Centre, University of Toronto, McMaster University, Athabasca University, University of New Brunswick, University of British Columbia, University of Manitoba	1 (CLR Media – web development company) and 1 (Alberta Asthma Centre)	7	TBA
Future projects								
<p>11 Support Intervention for Sudanese and Somali Refugees in Canada: this study is to design and pilot test culturally tailored interventions that meet the support needs and preferences defined by two ethno-culturally distinct refugee groups. (Submitted for funding to: CIHR, AHFMR)</p>	4	Sociology, psychiatry, nursing, anthropology	N/A	N/A	SSRP (University of Alberta)	1 (community service provider) and 1 (sociologist)	12	TBA

Table 1 Continued

SSRP research studies	Research team members	Disciplines	Research staff#		Collaborating institutions/organisations	Collaborators	Community partners*	CAC**
			Student	Postgraduate				
<p>12 Enhancing Asthma Education in Children: the purpose of this study is to evaluate a social support intervention to improve asthma control and quality of life of 7–11 year olds. (LOI to be submitted for funding to ASTHMA)</p>	7 academic and 1 non-academic	Nursing, medicine, education, social policy, work, health geography	N/A	1	SSRP (University of Alberta), Alberta Asthma Centre, University of Toronto, McMaster University, Athabasca University, University of New Brunswick, University of British Columbia, University of Manitoba	1 (CLR Media – web development company)	5	TBA

Research staff reported across sites (for multisite studies). 'Students' were/are staff doing Masters or PhD degrees, and 'postgraduates' are staff working after completion of either Masters or PhD degrees.

* Provide letters of support, access to potential participants, space for interviews/intervention, aid in recruitment.

** Drawn from community partners' involvement in research decision making, inner workings of project.

TBA, to be arranged; CAC, Community Advisory Committee; CIHR, Canadian Institutes of Health Research; LOI, letter of intent.

This fosters continuity and expedites research processes. Community partners/organisations serving a wide selection of vulnerable groups increase the opportunity for partnership in a range of projects. To illustrate, investigators and partners in project 1 subsequently collaborated in projects 3 and 6 (see Table 1). Most investigators and community partners in project 4 created a team for project 9, and have just submitted two proposals for another intervention study focused on Somali and Sudanese refugees (see project 10).

Leadership

Experienced strong leadership is essential for creating and sustaining collaborations (Boydell and Volpe, 2004; Brown *et al*, 2006). The lead founder of the research programme, supported by both experienced and young co-investigators, has conducted over 30 interdisciplinary multisite research and intervention studies on social support. Moreover, she was co-creator or director of three large interdisciplinary centres. Co-investigators provide sound, nurturing leadership. Input from every member of the research team, including research assistants, is valued. Operating norms such as attentive listening, openness, inclusiveness, agreement to disagree, compromise and mutual respect are supported and practised by our programme investigators to foster democratic processes and decision making (Israel *et al*, 1998).

Co-ordination

Team management or 'co-ordination' is an indispensable partnership characteristic (Lasker *et al*, 2001). Several strategies facilitate co-ordination of the multiple disciplines and sites, increase capacity of research teams and maintain relationships in our programme. Co-ordinators manage project implementation at each site, communication among investigators, and linkages with community stakeholders/partners. From the outset, there is continual exchange across all sites throughout all phases of projects. Face-to-face, telephone and email meetings facilitate co-ordination, commitment, sharing of perspectives from different disciplines and collective decision making. The principal investigator(s) of individual study teams is/are responsible for overseeing the entire study. All co-investigators and research assistants on a team have equal opportunities to contribute to decisions and provide vital input to all research stages. Work schedules are flexible to accommodate individual staff and investigator needs.

Communication

Effective and open communication is an indispensable facilitating factor for successful collaborative initiatives (Boydell and Volpe, 2004; Fox-Wasylyshyn *et al*, 2005). Our research teams schedule regular site and cross-site meetings (Woods *et al*, 2000), mainly via phone and email but with some face-to-face meetings at key junctures (see Table 1, projects 4 and 7). Meetings provide opportunities to define goals and process, and to plan and evaluate activities and progress. However, there is some rescheduling and alteration of deadlines in response to team members' responsibilities (Fox-Wasylyshyn *et al*, 2005).

In all studies, project co-ordinators strive to send meeting agendas and materials to team members in advance to permit preparation, and again just before meetings in order to remind members of the imminent meeting, a communication strategy advocated by Boydell and Volpe (2004). Chairing and recording are usually rotated among/between sites, and minutes are distributed soon after meetings. Cross-site transfer of files or documents is common. Prompt, clear communication regarding tasks, due dates and expectations is important (Henneman *et al*, 1995; Grossman and Bautista, 2002). Each team meets regularly with community partners to share progress, discuss strategies and plan future activities.

Methodological diversity

Given the complex research problems and methodologies in the intervention studies, core and co-investigators have complementary expertise in qualitative, quantitative and participatory research methodologies. This method of triangulation, involving multiple sources of data and methods, complements investigator triangulation that underpins interdisciplinary research collaboration (Israel *et al*, 1998; Giacomini, 2004).

When interdisciplinary inclusiveness extends beyond academic disciplines to encompass other forms of knowledge (Hviding, 2003), participatory methods become central to the success of collaborative research partnerships (Roos and Lombard, 2003; Kelly *et al*, 2004; Mercer *et al*, 2004; Reutter *et al*, 2005). The participatory approach rests on a series of steps that expand the traditional use of quantitative and qualitative methods (Israel *et al*, 1998) and are germane to research with vulnerable populations (Reutter *et al*, 2005; Stewart *et al*, 2005). First, research teams include community research partners on equal terms (Reutter *et al*, 2005). Second, there is active involvement of community advisory committees in designing and implementing studies, interpreting results for programmes and policies, and disseminating findings.

Third, study participants express support needs, support intervention preferences and suggest programmes and policy changes. Fourth, research teams hire community members and professionals to facilitate interventions and to conduct interviews. For example, in project 1 (see Table 1), people living in poverty were hired and trained as interviewers (Reutter *et al*, 2005; Stewart *et al*, 2005). Hiring community members to conduct research builds capacity (Israel *et al*, 1998).

Dissemination of findings

Strategies to translate and communicate research findings are guided by investigators, community advisory committees and the input of study participants. Findings are shared with community partners, who in turn make recommendations about the implications for programmes, policies and dissemination strategies. Research teams present at local, national and international symposia and conferences, routinely submit final reports of completed studies to the local, provincial and/or national funding agencies, and develop public reports. Each team selects relevant methods of distribution and audiences. Both fact sheets and public reports of the completed studies use clear language that respects and benefits community members (cf. Lantz *et al*, 2001), and are routinely posted on a research programme website for easy access. Team members publish articles, co-authored with community co-investigators wherever possible, in different disciplinary and interdisciplinary peer-reviewed journals, reaching a wider readership. Co-authorship and co-presentations have been used successfully in our programme and other research programmes (Lantz *et al*, 2001).

Training and mentorship

The SSRP provides opportunities for training at post-doctoral, doctoral or Masters level. Students, representing diverse disciplines, regularly work as research assistants assisting with data collection, data validity checks, data entry and analysis, under the supervision of team investigators. A post-doctoral fellow has successfully trained in the SSRP and continues to be affiliated as a member or principal investigator of research teams.

Strengths and challenges of interdisciplinary collaboration: success strategies and lessons learned

Leadership

Experienced leadership facilitates articulation of a collective vision, agreement on joint goals and partnerships for community improvement (Bourdages *et al*, 2003; Fear and Burnett, 2003; Boydell and Volpe, 2004). The experienced leadership of the co-principal investigators articulates a collective vision; that is, social support as a key resource for vulnerable groups, as the basis for project goals. Flexible and supportive leadership that fosters inclusiveness and openness has created a research programme with non-hierarchical structures and horizontal lines of communication (cf. Lasker *et al*, 2001) in which academics, policy makers, managers, service providers and users can all make valuable contributions. However, roles and responsibilities are still clearly defined within a context of collegiality, mutual respect, decision making, problem solving and goal setting – all markers of successful collaboration (Frame *et al*, 2002). Professional advancement of junior investigators is promoted by enabling them to act as principal investigators, thus providing a helpful step towards tenure and promotion (Fox-Wasylyshyn *et al*, 2005).

In spite of all these positive aspects of SSRP leadership style, there are a few dents in the structure and collaborative processes that need to be worked on. There are some instances in which project co-ordinators have felt like intermediaries, trying to mobilise the investigators on one hand and community partners on the other. Some community partners in some support intervention studies have noticed the apparent inaccessibility of investigators due to conflicting commitments. In another situation, one of our teams experienced tensions as a new team was being formed, with respect to roles and responsibilities. The team construction was required by the funding agency versus voluntary creation by the investigators. In this experience (project 11), there was a sense that some members were preoccupied with forwarding their own agendas to take lead positions, rather than working collectively. This is the case when teams have very contrasting ideas and are ‘forced’ to work together. However, subsequent collaboration resulted in successful funding of this study.

Interdisciplinary collaboration

Health disparities and support for vulnerable populations are the central foci of our research programme, within which the needs of complex populations and health-related challenges are effectively addressed by co-operation between disciplines (Hviding, 2003; Hawkins and Haggerty, 2003; Shaw and Mackinnon, 2004). Interdisciplinary collaborative research engenders increased research quality and productivity (Fox-Wasylyshyn *et al*, 2005; Israel *et al*, 1998). For example, the insights of different disciplines enhance momentum and help to develop a deeper and more comprehensive approach to the topic under study. Collaboration with investigators from service settings enhances relevance to practice and policies, and the contribution of academic investigators ensures scientifically rigorous methods. Collaborating with community partners facilitates recruitment, provides space for interviews and helps in interpreting the implications of findings.

The methodological advantages offered by our multisite interdisciplinary collaboration over single-site studies include: enhanced external validity, greater statistical power, large variance in the outcome and rapid recruitment (Weinberger *et al*, 2001). Furthermore, team members serve as links to an expanded network of resources (Fox-Wasylyshyn *et al*, 2005). In our research programme, most investigators across sites have strong links with national and international networks, and these connections help enhance the research, particularly as most of the core investigators have more than one specialisation. Some scholars have suggested that researchers with skills and knowledge in more than one discipline are particularly valuable members of interdisciplinary teams (Boydell and Volpe, 2004).

However, there continues to be a wide gap among academics, researchers, policy makers, service managers and service providers (Lehmann *et al*, 2004). While a multisite approach enables faster collection of data and enhances participation by a greater number of participants, the opposite has occasionally also been our experience. For example, data collection at different time points in the each site can impede analysis and ultimately delay report and article writing. In our multisite study 7 (see Table 1), we experienced loss of data as the result of conflicting philosophical viewpoints.

In our experience, community agencies are sometimes reluctant to join research teams because of the workload involved, demands on their staff who may already be 'stretched thin', or the perceived predetermination of study directions by the investigative team. These community agencies would be more open to partnerships with research teams if the research question, methods, activities, etc. were developed in collaboration, and addressed agency-identified needs.

Prior partnerships

Prior acquaintanceship and strong ties among academic investigators, and between investigators and community partners, fosters effective partnership, consensus and a common research agenda (O'Neil *et al*, 1997; Woods *et al*, 2000; Duncker, 2001; Bourdages *et al*, 2003). The advantages are more pronounced where these investigators have convergent views on future projects for the collaborative team. One positive consequence of collaboration on project 4 (see Table 1) was the design of an intervention study for immigrant seniors (project 9), and another study for Somali and Sudanese refugees. Most of the original community partners are on the two 'new' research teams, some as co-investigators. There are no reports in the literature of challenges emanating from prior relationships, which is characteristic of our experiences.

Methodology

Our investigators use pluralistic approaches that build on both quantitative and qualitative methods (Dean and Hunter, 1996; Popay and Williams, 1996), and reflect interdisciplinary inclusiveness and value participatory approaches (Hviding, 2003) to enhance relevance and facilitate uptake of the findings (Reutter *et al*, 2005). The research teams combine academic knowledge and expertise with that of community members and agencies using participatory methods (Kelly *et al*, 2004; Roos and Lombard, 2003). This provides community partners and researchers with the opportunity to focus attention on the real needs and problems that affect vulnerable groups, and to encourage the uptake of research results by policy makers and service providers.

The impressive benefits of involving community members include increased appreciation for research, awareness of vulnerable populations' service preferences, and cohesiveness of support provision. Input from community service providers, grounded in their experience of working with vulnerable groups, increases researchers' capacity to develop culturally and contextually appropriate strategies. Other research teams have reported similar positive collaborations with community partners (Israel *et al*, 1998; Woods *et al*, 2000; Lantz *et al*, 2001; Glasser *et al*, 2003; Brown *et al*, 2006).

To illustrate the points made here, the participatory action strategy of including community members in conducting research in project 1 (see Table 1) reinforced feelings of competence, self-worth and importance in participants (Reutter *et al*, 2005; Henneman *et al*, 1995), enhanced the quality of the process and research results (Israel *et al*, 1998), and promoted trust and openness during interviews (Reutter *et al*, 2005).

However, the disadvantages of employing people on low income to conduct interviews included compromised validity and quality of the data because they were not able to probe adequately, and there were limited time and resources to train people with little or no research experience (Reutter *et al*, 2005).

In our support intervention studies, while hiring community professionals and peers to work as group facilitators has many benefits including trust and knowledge of the target population, their unfamiliarity with research and the processes of organisations is sometimes a challenge. In the 'Homeless Youth' project (study 6 in Table 1), a community facilitator who worked for the organisation serving the target population was hired to aid in recruitment and delivery of the intervention. However, she had not discussed the research in detail with her executive director. Data had to be discarded and destroyed later, as the organisation had a policy of not conducting research with its clientele. Ethical issues arose when participants were promised an intervention but then later were not allowed to participate. Resistance of key people to partnerships continues to be a major threat to collaborative research initiatives (Lasker *et al*, 2001).

Another key challenge is that, while the studies are underpinned by the participatory notion of seeking participants' preferences regarding support interventions, funding agencies require proposals detailing exactly what the intervention will entail. Inability to specify all aspects of the research design and intervention up-front is a key methodological barrier in participatory research studies (Israel *et al*, 1998).

Involvement of investigators and community partners: time constraints and commitment

Academic researchers and their community partners in the research programme are highly committed to all phases of the study from proposal writing to dissemination. However, time constraints and other factors compromise the involvement and commitment of academic investigators and community partners alike, and undermine the teams' abilities to meet pre-set targets. Establishing and maintaining trusting relationships and involvement in the research process requires a lot of time from both academic and community partners (Israel *et al*, 1998; Lasker *et al*, 2001; Reutter *et al*, 2005). However, in some of our projects, there is insufficient time to continue meeting periodically with the community advisory committees in order to maintain relationships (see Reutter *et al*, 2005 for a good example). Losing touch means loss of communication, other than mailed progress reports. Academic partners experience multiple time demands, including teaching and research project(s) responsibilities (Lantz

et al, 2001; Fox-Wasylyshyn *et al*, 2005; Pfirman *et al*, 2005).

Some community partners experience difficulties in keeping verbally stated commitments. In our recently completed Homeless Youth (Table 1 project 6) intervention project, some community partners that had verbally committed to being intervention sites in phase one of the project backtracked in phase two. Thus, relationships had to be re-established before the intervention could begin. Another partner committed to another research initiative, and youth could have potentially been interviewed multiple times by both research projects. The community organisation limited our ability to recruit participants, and we ended up sharing data from different projects for a small proportion of participants. Thus community partnerships involving many of the same partners in the community is a key challenge to recruiting and retaining partners (Lasker *et al*, 2001). A third community agency that initially agreed with our recruitment approach subsequently changed the approach to self-recruitment, but homeless youth cannot be expected to expend the effort to call about research without a home telephone. In our study on immigrant seniors (see Table 1), one research assistant experienced difficulty recruiting through a community agency that initially agreed to help with recruitment, until the project co-ordinator communicated by emails/and phone calls. Other scholars have identified commitment as a key characteristic of interdisciplinary research teams (Heenan, 2004; Fox-Wasylyshyn *et al*, 2005). Sustaining the commitment of investigators and community partners is a key challenge (Cook *et al*, 2002; Heenan, 2004).

One way to remedy such situations and maintain commitment from community partners is through a declaration of formal partnership that outlines partnership responsibilities and commitments to the research. Brown *et al* (2006) note that 'formalisation', involving legal agreements and memoranda of understanding between agencies, is a key characteristic of a successful partnership. Formalisation would extend a partnership beyond the tenure of the individuals who initially formed it (Brown *et al*, 2006), and bring continuity when new project co-ordinators or community agency personnel take over responsibilities.

Co-ordination

Various co-ordination strategies sustain partnerships. The collegiality engendered by regularly scheduled multisite meetings, either face-to-face or via teleconferences, helps to build trust and facilitate the achievement of goals at every stage of our studies. The employment of qualified overall co-ordinators based in the SSRP office in Edmonton and site co-ordinators in satellite sites increases capacity and

synergy of research teams. Common interview schedules, data collection methods and data analysis procedures used across multiple sites always help to ensure consistency across sites.

However, at times staff find it difficult to accommodate conflicting suggestions made by team members. Sometimes these are minor, for example the editing of a proposal, but at other times the suggestions can have a major impact on the study, for instance in the choice of methods to be used. Deadlines can be difficult to manage for staff working with a large team. Although deadlines may be clear, the larger the team the more difficult it is to receive feedback from all members in a timely fashion, which can delay the preparation of final documents, such as proposals, reports to funding bodies, public reports and manuscripts. According to research programme staff experience, activities with smaller teams have been easier to co-ordinate.

Communication

The success of an interdisciplinary collaboration depends on open and effective communication and we seek to establish an environment in which members listen to each other's perspectives and contributions to planning and goal setting (Hviding, 2003; Bourdages *et al*, 2003; Boydell and Volpe, 2004). Our study teams aim to communicate successfully right from the start, with the development of letters of intent, through proposal preparation and throughout all phases of projects. They use a variety of strategies including face-to-face cross-site meetings, email communication and bimonthly teleconferences to share insights and facilitate collective decision making. Ongoing communication with stakeholder agencies and among academic investigators and staff helps to ensure transparency and rigor in our research. The greatest challenge faced by most teams lies in coming to consensus on meeting times, particularly with employment and work commitments elsewhere. The larger the team, the more difficult it is to set up a meeting when all members are available. This is particularly challenging when there is a tight timeline and the team is located across multiple time zones. When team members cannot consistently attend teleconferences, they are less involved because they are not aware of decisions or the rationale for these, even when minutes are provided. Communication via teleconference is at times confusing, ineffective and frustrating, especially when there are too many people on line. Silence becomes the norm at times after the meeting chair poses questions and invitations for input.

Training and mentorship

Post-doctoral, doctoral or Masters-level research assistants and project co-ordinators employed in the research programme help to maintain the integrity of data collection and analysis, under the supervision of interdisciplinary team investigators. An important reason for involving graduate students or recent graduates is to develop and expand their knowledge base concerning the research process and how research can inform service/support provision for vulnerable groups. Research staff who come from various disciplines also contribute knowledge and skills that benefit academic investigators. Junior academic staff bring new perspectives that benefit senior academic investigators. Some with Masters degrees have been inspired to start PhD degrees, and one post-doctoral fellow worked on various research teams, and then established and led her own research team. This mentoring strategy and its benefits have been reported by other research teams, and referred to as a 'mutual and reciprocal mentorship' relationship (Fox-Wasylyshyn *et al*, 2005). Mentorship by the principal investigator and co-investigators develops and extends knowledge and appreciation of the entire research process and of interdisciplinary collaboration (Fox-Wasylyshyn *et al*, 2005).

Our biggest challenge regarding mentoring initiatives is high turnover caused by short-term research grants. Most recent graduates soon seek a permanent post to establish their careers.

Dissemination of results

In our collaborative model, stakeholders focus on the relevance of the research for vulnerable groups, and encourage translation and uptake of results by service providers, programme planners and policy makers. Our research teams also disseminate project findings widely to traditional and non-traditional audiences. Communication of knowledge gained from research studies to policy and administrative audiences who might apply the results is now required by some funding agencies (Giacomini, 2004). Research findings are always presented to partners and study participants in ways that are understandable and useful. Reaching a broader audience to increase the impact of interdisciplinary studies is a strategy also used by other research teams (Fox-Wasylyshyn *et al*, 2005). The downside of interdisciplinary partnerships involving community agencies is that research becomes a longer process from inception of an idea to dissemination of results, which can affect publication productivity. Moreover, the resource intensiveness of

studies that incorporate participatory elements means sufficient funding must be allotted to knowledge dissemination and translation (Reutter *et al*, 2005).

Conclusion

Other research teams have reported positive collaborative research experiences with community partners (e.g. Israel *et al*, 1998; Woods *et al*, 2000; Lantz *et al*, 2001; Glasser *et al*, 2003; Fox-Wasylyshyn *et al*, 2005). Our research model has had incremental influence on service providers' and policy makers' awareness of the impact of policies and programmes that value diversity. The reduction of health disparities demands interdisciplinary perspectives, in a variety of settings, because of the complex relationships among social determinants (Hawkins and Haggerty, 2003). Our collaborating investigators are drawn from diverse disciplinary backgrounds and community partners in multiple sites, which enables methodological diversity, expeditious data collection and larger sample sizes. Ongoing communication ensures transparency and rigor in research. Partnerships between (1) institutions representing multiple disciplines, and (2) academic institutions and community agencies in different sectors can address health disparities (Glasser *et al*, 2003). This research programme incorporates both strategies. The success of our studies with vulnerable populations is contingent upon interdisciplinary teams with varied epistemological, ontological and methodological backgrounds (Hviding, 2003). Diverse perspectives foster comprehensive and multidimensional analysis of the support and health needs of vulnerable groups. These analyses generate a corpus of interdisciplinary knowledge, which is shared with practitioners, programme planners, policy makers and public organisations, to improve the health of disadvantaged populations. Moreover, the research programme encompasses the spectrum of skills and perspectives necessary to solve complex problems afflicting vulnerable populations. Our collaborative initiatives also enable community groups to guide relevant research and generate support at local, provincial and national levels. Involving service providers has increased their appreciation for research and increased their understanding of the preferences of members of vulnerable populations. Literature attests to the production of more grounded, locally responsive theories and strategies that link science to local experiences (Lasker *et al*, 2001).

Collaborative initiatives in this research programme are encouraged and sustained by other auspicious factors, such as funding bodies that encourage community-based approaches and the enthusiasm of community partners who experience the plight of vulnerable people first-hand. Programmes, practice

and policies informed by collaborative research can formulate effective strategies that reduce disparities and promote the wellbeing of diverse vulnerable populations. However, as this paper has shown, there are many factors to consider in making our approach work. True and effective collaboration is not easy to achieve and we continue to work on addressing the issues that it raises.

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CONFLICTS OF INTEREST

None.

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