Use of concurrent mixed methods combining concept mapping and focus groups to adapt a health equity tool in Canada

Anne Guichard[a,*], Émilie Tardieu[a], Christian Dagenais[b], Kareen Nour[c],
Ginette Lafontaine[c], Valéry Ridde[d]

[a] Université Laval, Québec, Canada
[b] Université de Montréal, Québec, Canada
[c] Direction de santé publique de la Montérégie, Longueuil, Quebec, Canada
[d] Université de Montréal School of Public Health (ESPUM), Université de Montréal Public Health Research Institute (IRSPUM), Québec, Canada

ABSTRACT

The aim of this project was to identify and prioritize a set of conditions to be considered for incorporating a health equity tool into public health practice. Concept mapping and focus groups were implemented as complementary methods to investigate the conditions of use of a health equity tool by public health organizations in Quebec. Using a hybrid integrated research design is a richer way to address the complexity of questions emerging from intervention and planning settings. This approach provides a deeper, operational, and contextualized understanding of research results involving different professional and organizational cultures, and thereby supports the decision-making process. Concept mapping served to identify and prioritize in a limited timeframe the conditions to be considered for incorporation into a health equity tool into public health practices. Focus groups then provided a more refined understanding of the barriers, issues, and facilitating factors surrounding the tools adoption, helped distinguish among participants' perspectives based on functional roles and organizational contexts, and clarified some apparently contradictory results from the concept map. The combined use of these two techniques brought the strengths of each approach to bear, thereby overcoming some of the respective limitations of concept mapping and focus groups. This design is appropriate for investigating targets with multiple levels of complexity.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

Social health inequalities concern several areas of society and challenge notably healthcare and public health system all around the world (Commission on the Social Determinants of Health, 2008; WHO, 2011). In Canada, there has been a long-standing emphasis on reducing social inequalities in health (SIH) in public health policies, driven in large part by the 1986 Ottawa Charter for Health Promotion which called for action on social determinants of health (Direction de santé publique de la Montérégie, 2007; World Health Organization, 1986). In 2008, SIH reduction was stated as a national public health priority for Canada (Public Health Agency of Canada, 2008). Since then, numerous reports have recommended strengthening public health infrastructures, supporting the services they offer, and improving collaboration between the public health organizations at all levels to improve health equity. In the province of Quebec, there are laws and policies advocating for health equity and a reduction of SIH, including reports by each of the Direction de santé publique (DSP) or public health departments of the three largest regions in Quebec, namely Montreal, Montérégie, and Québec(Direction de la santé publique de Montréal, 2011; Direction de la santé publique de la Capitale Nationale, 2012; Direction de la santé publique de la Montérégie, 2007). In Quebec, the DSPs are mandated by the Public Health Act (Loi sur la santé publique, 2001) to ensure that both the provincial public health program (Direction générale de la santé publique du ministère de la Santé et des Services sociaux, 2008) and the regional action plan (Direction de santé publique de la Montérégie, 2013) are implemented in collaboration with the local health and social services centers (centres de santé et des services sociaux – CSSS) that develop and implement local public health action plans based on the provincial and regional plans.

* Corresponding author at: Université Laval, Faculty of Nursing, Pavillon Ferdinand-Vandry, Room 3465, 1050, avenue de la Médecine Québec, Québec, G1V 0A6, Canada.
E-mail address: anne.guichard@fsi.ulaval.ca (A. Guichard).

Implementation of policy with regard to SIH requires that health equity be addressed in the design of and implementation of interventions; to facilitate efforts to link practice to policy, tools and methods has been developed to help health professionals to incorporate health equity into practice. Tools and methods include assessments of health equity outcomes, audits of policies and plans, and lenses or a series of reflective questions designed to quickly introduce awareness of health equity in the development of plans and processes (Mendell, Dyck, Ndumbe-Eyoh, & Morrison, 2012; Orenstein & Rondeau, 2009; Pauly et al., 2013). In spite of the these resources, progress on reducing SIH has been limited and it is remains difficult to position SIH issues within the planning, implementation, and outcome evaluation of public health interventions (National Collaborating Centre for Determinants of Health, 2014). The constraints on actions with regard to SIH tend to fall under three categories: (1) tools, (2) organizations, and (3) the overall environment within which organizations are operating. Characteristics of the tool that limit use includes lack of user guide, tool complexity, cost of use, and difficulty applying the tool outside of the context in which the tool was developed (Mendell et al., 2012; Pauly et al., 2013; Tyler, Amare, Hyndman, & Manson, 2014). Characteristics of organizations that may impede action include the health professionals' perception of their ability to influence decision-making and the extent to which equity in is included in organizational norms and mandates (Brassolotto, Raphael, & Baldeo, 2013; National Collaborating Centre for Determinants of Health, 2013; Signal et al., 2007). In the environment, constraints can result from limited financial support and a lack of favourable laws and regulations (Cohen et al., 2013). Our intent was to implement a tool to enhance the understanding of and improvement of SIH; recognizing the challenges previously described, we approached this work by using systematic inquiry to understand the potential constraints and then use that information to design implementation to overcome those constraints.

A regional public health organization or DSP, the Montérégie DSP, wished to equip itself with a tool to support analysis of interventions and better account for SIH; the DSP chose the Grille d'analyse des actions pour lutter contre les inégalités sociales de santé or GAALISS (Translation: Analysis grid for actions to fight against social inequalities in health). The GAALISS is a health equity tool that incorporates the principles of reflective practice, a model [reflexive practice] which Masuda (2014) proposed to address health inequities. In brief, reflective practice asks stakeholders to reflect on and then be clear about the inclusion and exclusion of people and perspectives, priorities and limitations, and then work in service of others. Initially disseminated in France for the use of practitioners in the field who wished to pay particular attention to how their actions took SIH into account, GAALISS is based on idea of submitting intervention designs for improving population health to a more systematic collective (team) discussion. The tool provides a basis for reflexive analysis of actions aimed at reducing, or at least not aggravating SIH and was developed from three existing health promotion tools; Closing the gap (2009), Preffi 2.0 (Molleman, Ploeg, Hosman, & Peters, 2006) and the Canadian Consortium (Hills, Carroll, & O'Neill, 2004). To our knowledge, GAALISS is the only tool that focuses on critical reflection and on the reflexive practice required to develop professional competencies regarding equity issues. Recognizing that the tool needed to be modified and tested on a wider scale to ensure applicability and transferability and being aware of the constraints on tool use from prior research, the aim of this study was to identify and describe the conditions that would facilitate using the GAALISS tool.

A convergent mixed methods design was implement to achieve this aim; quantitative and qualitative data were collected concurrently and integrated during the analysis stage (Pluye & Hong, 2014). Mixed methods (Creswell & Plano Clark, 2006; Patton, 1990; Waszak & Sines, 2006) combining group and individual techniques, as well as qualitative and quantitative analysis, presents several advantages. First, comparing different perspectives obtained through different methods helps identify convergences between results. With this strategy, biases inherent in one method can be compensated for by another (Cook, 1985). Second, harnessing different methods allows complementary perspectives to emerge, leading to a more refined understanding of the problem (Posavac & Carey, 1992; Wilson & Hutchison, 1991). Although inconsistencies that may arise with multiple methods, convergent results are more credible than results obtained using a single method (Wiener, Wiley, Huelsman, & Hilgemann, 1994). We adopted a methodological approach that would bring priority needs to the surface and encourage debate among stakeholders. We used both concept mapping and focus groups as complementary methods of inquiry that would surface needs and encourage dialogue.

2. Methods

2.1. Health equity tool

The GAALISS is a team analysis and discussion tool for actions aimed at reducing SIH (Guichard & Ridde, 2010); the tool has 51 assessment criteria that cover five aspects of interventions – planning, implementation, evaluation, sustainability, and empowerment. The criteria are in the form of questions listing elements deemed important for successful action in the area of SIH. For each criterion, the team analyzing a project is asked to provide a reasoned and contextual assessment of how the project takes that particular SIH aspect into consideration. Notwithstanding the highly structured format, the tool is above all an invitation for the stakeholders to discuss and reflect on the intervention being analyzed.

2.2. Participants

As health professionals and managers would be the first to use the GAALISS tool, involving them in the tool's adaptation to professional practice in Quebec healthcare was critical to success. Therefore, the population for this research consisted of future GAALISS users obtained from a purposeful sampling (Emmel, 2013; Patton, 2002). The sample included individuals from the two types of organizations where the tool would be used, namely the Montérégie DSP and the region's 11 CSSSs. We used heterogeneity sampling to identify people within these organizations who would represent the points of view of different types of staff (health professionals, physicians, managers) and of public health themes (environmental health, childhood, vaccination, dental health, etc.). Members of the study's steering committee selected 44 participants who were invited by email to participate. The number and distribution of participants for each method and stage, by professional status and home organization, are presented in Table 1.

2.3. Data collection

We used four data collection techniques for our research: 1) concept mapping, 2) focus groups, 3) a discussion workshop, and 4) a quantitative questionnaire. Data collection for concept mapping and the focus groups occurred at the first in-person meeting and the results were shared at the discussion workshop at a second in-person meeting. During the activities at both meetings a research assistant systematically took notes recording observations of group dynamics and participants' comments which helped to shape some of the analyses. As the objective of this article is to

Table 1
Number and distribution of participants for each method and stage, by professional status and home organization.

	Concept Mapping Data collection (N = 39)	Focus Group (N = 37)			Concept Mapping (cluster naming) (N = 22)	Assessment questionnaire (N = 16)
Managers	n = 10	Gr 1	DSP & CSSS	n = 9	n = 4	n = 2
Health Professionals	n = 29	Gr 2	DSP	n = 12	n = 18	n = 14
		Gr 3	CSSS	n = 9		
		Gr 4	CSSS	n = 7		

analyze the combination of CM and FG methods, the only elements from the discussion workshop and the assessment questionnaire that will be discussed are those supporting the analysis of the techniques being studied.

2.3.1. Concept mapping

As concept mapping is described in detail elsewhere (Kane & Trochim, 2007b; Trochim & McLinden, 2017) so we will not repeat steps in detail. Concept mapping was chosen to identify (qualitatively) the required adaptions and conditions for use of the GAALISS tool and then to prioritize these (quantitatively). Participants were asked to produce as many statements as they wished completing the following sentence: "*In my opinion, I think it will be easier to use the GAALISS tool in my professional practice if . . .* " Later that same day, participants sorted and rated the statements produced by the whole group during the brainstorming stage. Participants individually assigned ratings of importance and feasibility, on a five point rating scale, to each of the statements. Participants also worked individually and sorted each of the many statements into a smaller number of groups of conceptually similar statements. The aggregate sorting data from all of the participants was analyzed using hierarchical cluster analysis (HCA)[1] to group into clusters the elements that represented similar concepts according to the participants (Borgen & Barnett, 1987). Then, multidimensional scaling was used to position each cluster in relation to the others in a way that represented the correlational distances among them (Kruskal & Wish, 1978). Descriptive statistics were applied to the rating data. Results of the concept mapping activities were shared with the group in a second meeting that took place several months later. The analysis was carried out using a non marketed module specially designed for this study by Provalis Research (http://provalisresearch.com/).[1]

2.3.2. Focus groups

Focus groups (FG) (Krueger, 1994) were conducted on the same day as concept mapping. Given the high engagement of professionals in the region in this stage of data collection, their workloads, and the travel expenses involved, we chose not to wait for the production of CM results to initiate collective discussion as is normally done with CM (Kane & Trochim, 2007a). The presence of these potential GAALISS users provided a unique opportunity to set up FGs and thereby enter into discussions that go deeper than those held during the initial CM stages. In fact, the participating professionals were eager to engage in substantive dialogue. These individuals are subject to high expectations on SIH issues and they valued the opportunity to set aside time to consider these issues and collaborate on the complex realities involved in SIH. The FG technique allowed participants to explore and clarify the

conditions identified during CM, to encourage sharing of experience and of professional and organizational realities, and to give participants an active part in analyzing the SIH situation (Dahlgren, Emmelin, & Winkvist, 2007; Kitzinger, 1994, 1995). There were multiple groups and to encourage free expression, we avoided placing participants in the same group if they had a reporting relationship. Participants from the DSP were separated into two groups, managers in one and health professionals in the other. Those from the CSSSs were divided into different groups based on their roles as managers or health professionals. Our aim in forming relatively homogeneous groups was to bring out key elements specific to their particular roles and responsibilities within their organizations. In the first FG session participants discussed their interest or disinterest in using GAALISS in their professional practice (e.g. perception of the tool, interest in and reasons for using or not using such a tool, and for which activities). In the second FG session, participants discussed conditions of use for GAALISS as well as challenges they encountered when trying to consider SIH in their work. Each FG was facilitated by a researcher or another member of the steering committee, assisted by a student or professional who took notes and managed logistics. All FGs were recorded on digital media and transcribed in their entirety.

2.3.2. Discussion workshop

In a second meeting, approximately four months after the first meeting, a discussion workshop (Lavis, Boyko, & Gauvin, 2014) was conducted. In this meeting, 22 participants of the 39 (56%) who had been present for the first meeting attended this second meeting. During this workshop, the participants reviewed the concept maps and interpreted meaning by naming each of the clusters of statements. The participants' task was to reach consensus in assigning each cluster a title that represented the theme in the clusters of statements. To avoid influencing the participants or restricting their emic perspective (Kahneman, 2011), participants were not provided with draft titles as a starting point, as is sometimes done. The aim was for the participants to take ownership of common concerns represented in the map and define the clusters of statements in their own terms. The researchers facilitated the discussion by reflecting back the themes contained in each cluster. To help the participants get started, the discussions began with the two clusters whose content seemed the most obvious and that therefore seemed easiest to name. In addition to concept mapping interpretation the FG results were also shared with the participants and they were given the opportunity to comment, add details, or ask questions regarding them.

2.3.4. Thematic content analysis

Thematic content analysis was conducted on all of the data from the FGs (Patton, 2002). Cross-analysis of the results from the CM and FGs consisted in gathering, juxtaposing, and then combining in a structured way (in a matrix format) the clustered CM statements and the themes identified by the discussion groups,

---

[1] Although most Concept Mapping projects conduct the HCA after the MDS, our experience shows that reversing these analyses produce much clearer results. See examples of this in (Carter, Enyedy, Goodyear, Arcinue, & Puri, 2009; Dagenais et al., 2015; Péladeau & Dagenais, 2012).

with a view to examining convergences and divergences of the results produced by the two techniques (Pope, Mays, & Popay, 2007).

2.3.5. Process assessment

At the conclusion of this inquiry, participants were asked to complete a brief questionnaire to assess the process. The questionnaire asked for participants' satisfaction with regard to the two workshops including content and organization, how they were led, and the quality of the exchanges. The results were analyzed using descriptive statistics.

3. Results

As this article focuses on the advantages of using a mixed methodology concurrently combining CM and FG, and on the researchers' reflexive approach to these techniques, the results presented in the following section are limited to elements that are necessary for understanding the process and the respective contributions of each method. Thus, the results presented are mainly the results of *using* the two techniques, rather than the results of the techniques themselves.

3.1. Concept mapping (CM)

Forty four individuals were invited and 39 (88%) participated in a brainstorming session and produced 100 statements. In the cluster analysis these statements were initially grouped into 10 clusters consisting of one to 19 items. After a researcher group discussion there was consensus agreement to reclassify a lone item into another cluster, the resulting map (Fig. 1) consisted of nine

clusters containing from five to 19 items. Table 2 presents the final nine cluster titles along with the number of titles proposed for each cluster, the number of items in the cluster, the average (mean) feasibility and importance ratings and the difference between importance and feasibility. The average (mean) importance ratings for the items ranged from a low 2.44 to a high of 4.56 and the feasibility ratings from 2.13 to 4.62, the statements at the high and low end of the ratings are in Table 3.

3.2. Focus groups (FG)

There were four groups of participants (37 of the 39 people involved in CM – 95%) and each group considered both of the focus group questions; (1) interest in using GAALISS and (2) challenges to implementing SIH. Three major dimensions emerged (Table 4) from the FG and these results were shared with participants at the second in-person session; (1) issues with the tool, (2) implementation issues and (3) issues regarding the context in which the tool would be used With regard to the tool, participants identified issues that would be barriers to and facilitating factors for the use of the tool as well as adaptations that would be required for successful implementation.

3.3. Questionnaire

Of the 26 potential respondents, 16 completed this questionnaire (DSP n = 9, CSSS n = 7). Most, 87.5% (n = 14) appreciated being involved in the assessment process and 93.7% (n = 15) appreciated participating in the discussion workshop. The discussions among colleagues from the DSPs and the CSSSs were appreciated by 87.5% (n = 14) of the respondents. Moreover, 81.2% (n = 13) felt these
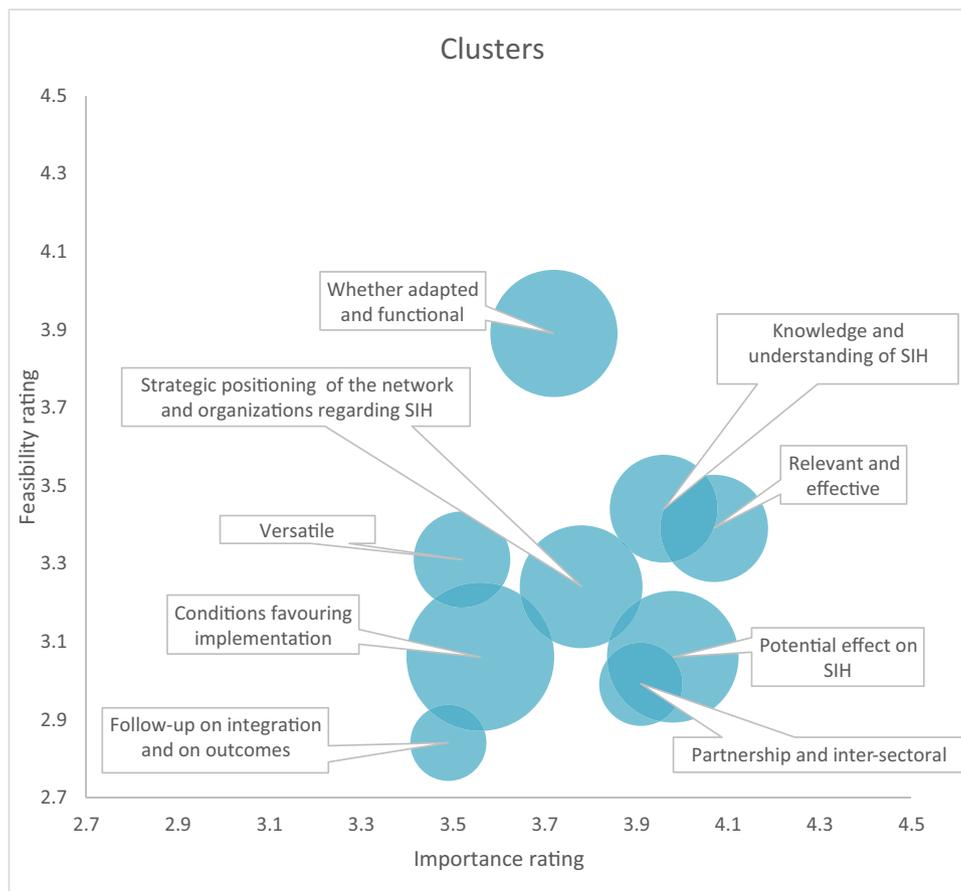

Fig. 1. Concept map according to the importance and feasibility ratings.

Table 2
Cluster titles and ratings for importance and feasibility.

Cluster	Final title	Number of titles proposed	Number of items	Average importance rating	Average feasibility rating	Importance–feasibility discrimination
1	Conditions favouring implementation	17	19	3.56	3.06	0.50
2	Versatile	8	8	3.52	3.31	0.21
3	Whether adapted and functional	7	14	3.72	3.89	−0.17
4	Knowledge and understanding of SIH	9	10	3.96	3.44	0.52
5	Relevant and effective	7	10	4.07	3.39	0.68
6	Potential effects on SIH	4	15	3.98	3.06	0.92
7	Strategic positioning of the network and organizations regarding SIH	3	13	3.78	3.24	0.54
8	Follow-up on integration and on outcomes	13	5	3.49	2.84	0.65
9	Partnership and inter-sectoral collaboration on SIH	4	6	3.91	2.99	0.92

Table 3
Discrimination between important and feasible conditions for use of the tool.

	Conditions for use of the tool	Importance	Feasibility
Most important	*If we are able to act on SIH*	4.56	3.62
Least important	*If it is mandatory in the local action plan*	2.44	3.33
Most feasible	*If there is a glossary for the tool*	3.38	4.62
Least feasible	*If everyone does it*	2.67	2.13
Most strongly discriminates in favour of importance	*If the tool is used at all levels of the system*	4.15	2.24
Most strongly discriminates in favour of feasibility	*If an English version of the grid is available*	3.03	4.33

Table 4
Main results of the focus groups.

Dimension	Heading	Main themes
The tool	Barriers	Actors' lack of knowledge
		Lack of time to use it
		Numerous priorities with respect to its use
	Drivers	Helpful
		Improving practices
		Planning interventions
		Promoting discussion
		Training
	Adaptations	Shorten the grid
		Simplify the terminology
		Make the tool user-friendly
		Add examples
		Draft a user's guide (including a glossary)
Issues concerning tool use	Implementation	Leadership support
		Organizational priority
		Voluntary *versus* mandatory use
	Practical application	In partnership
		At all organizational levels
Context of the fight against SIH	Barriers	Common vision necessary
		Performance measures not adapted
		Organizational silos
	Drivers	Leadership
		General mobilization
		Training

exchanges would help develop a shared vision around addressing SIH between the local and regional levels. The participants' interest in the tool was confirmed by the fact that 73.0% reported they were waiting for the new version of the grid to become available so they could use it. Several statements suggested that a sense of motivation resulted from this participatory process, such as these two verbatim excerpts from the questionnaires: "*It is crucial to ensure follow-up on this project so that the participants' involvement not be in vain*"; "*This is a relevant project with exchanges that were very stimulating.*"

3.4. Reflections on process

3.4.1. Concept mapping

Using CM made it possible to identify within a limited time conditions of use for the tool as perceived by all participants and to prioritize them based on criteria of importance and feasibility. The results illustrated that the most important issues as represented by the clusters (Table 2) or the items (Table 3) were not necessarily the most feasible, and vice versa. The ratings data (importance and feasibility indices) generated by the CM technique proved to be

useful for decision-making and for defining strategic guidelines. For example, the feasibility ratings identified immediate opportunities to initiate attainable short-term changes (examples of items corresponding: *If there is a glossary for the tool; If an English version of the grid is available*). The ratings also allowed us to understand the concerns according to specific groups based on area of work, occupational role, and level of activity (regional or local). Among the limitations observed, the most significant, during the brainstorming stage of CM, was participants' frustration at being restricted to completing one sentence in a brief and summary fashion, without being able to express themselves further regarding its content or meaning. Indeed, several participants wished to develop or illustrate their ideas, while others expected an opportunity to confront other opinions and debate certain statements: "*When can we talk? It means nothing if I can't explain why I'm saying this*," declared one participant. Other challenges emerged at the stage of assigning cluster titles during the discussion workshop. First, the participants had difficulty understanding the groupings, constructed based on a statistical analysis in which they had not been involved and which they sometimes found unrelated to the meaning of the statements or the groupings they had produced individually; "*It doesn't follow common sense,*" said one participant. Assigning a title to each cluster by group consensus was challenging as there was disagreement over naming; some wanted simple and clear cluster names "*that are down to earth,*" while others used more abstract vocabulary that not everyone understood. An additional challenge during this stage was that participants did not see the point of naming the clusters, as they had already done so on an individual basis: "*I don't quite understand why we have named the clusters or what that will be useful for,*" commented one participant.

3.4.2. Focus group

The FGs provided an opportunity to collect, analyze, and resolve apparent differences in views expressed by various stakeholders during the CM by exploring their underlying reasoning. For example, concerning whether use of the tool should be mandatory or not, statement 20 of the CM ("*If I use it voluntarily*") contrasted with statement 73 ("*If it's mandatory in the local action plan*"). During the FGs, this contradiction was qualified by one participant, who explained that the tool would only be effective if used on a voluntary basis by a team that is willing to engage with the issues. The participant explained the potential risks for the established partnerships if they made the tool mandatory. Meanwhile, another participant indicated that, given current professional structures (operating in silos) and workload-related time constraints that are incompatible with the process required by the tool and effective use of the tool ("*if we really want it to have an impact*") would depend on incorporating it into organizational practice (the local action plan). By differentiating participants based on their professional role and their home organization, we were able identify themes that received more attention in certain groups. For example, the tool's potential as a support to practitioners was mainly raised by CSSS professionals, who work at a more local level, while the issue of organizational silos was mainly raised by the DSP group. The manager group, in turn, was more concerned with evaluation and performance challenges related to use of the tool. Thus, the FGs flagged concerns specific to each group of health professionals and managers, something that could not be achieved with CM. One of the main limitations of the focus groups was that they depended on oral communication. Thus, within the groups, participants with stronger communication skills or leadership ability tended to dominate and steer the discussion: "*Note that a few people in positions of authority can greatly influence the ideas and the direction of the discussion,*" cautioned one participant in the comments section of the questionnaire. For this reason, in the FG

analysis, some participants may have had more weight than others. This is unlike CM in which data collection is done individually and each person's contribution has an equal weight. Also, in contrast to CM, FGs do not allow for elements to be prioritized in a formal and quantified way and recurrent themes that suggest an element is significant can be the result of a discussion dominated by one or two participants who are more articulate than the others, a situation that the facilitator cannot always remedy. Moreover, the time required to analyze FG data remains a factor that could limit use of this technique, even more so when a cross-analysis is performed with results of another technique, as in our research. Finally, from a logistical standpoint, this technique required greater material and human resources than did CM. Forming eight FGs while including a reasonable number of participants in each group and avoiding hierarchical conflicts entailed significant logistical needs with regard to number of rooms (n = 4), time required (eight hours), and number of facilitators (n = 4) and recording observers (n = 4).

4. Discussion

4.1. Relative contributions of the two methods

We found the use of mixed methods to be relevant and appropriate, as each contributed in a different but complementary way to shedding light on a subject of study that was complex on several levels: the subject being explored, namely SIH; the organizational and political realities underlying health professionals' ability to use an SIH tool; and the diversity of the groups and professional cultures involved (physicians, community organizers, managers, etc.). Together the two techniques provided concrete and operational ideas that can be introduced to support change (e.g., adaptations to the tool) and offered an overview of the issues/challenges involved in putting such a tool into active practice. The results produced by CM clearly identified a variety of conditions for use for the tool, while taking into account sometimes divergent perceptions of the roles and responsibilities of different health professionals at both the local and regional levels. Although the CM question focused on use of a tool, the technique brought out the importance of organizational context and of partnerships, as well as some broader challenges for public health actors involved in the fight against SIH.

While CM has the advantage of generating many ideas quickly, the method did not provide sufficiently detailed content and the addition of FG offered a deeper, contextualized understanding of the conditions (statements) formulated during the CM process that, in some instances, may have seemed unclear or even contradictory. This study suggests that using FG can enhance the CM experience for participants who may be frustrated by methodological constraints. In cases where CM is perceived as limiting " . . . *the degree of freedom and openness of discussions among participants*" (authors' translation) (Felx, Kane, Corbière, & Lesage, 2014, p. 549), the FG method provided a venue for participants to express, elaborate, and defend their ideas.

CM is occasionally presented in the literature as an alternative to FGs (Southern et al., 1999), our experience rather suggests that using FGs produces results that are different from, but complementary to CM (Dahlgren et al., 2007). The FG method is often faulted for not allowing discussion of sensitive or complex subjects (Kitzinger, 1995; Touré, 2010), our experience showed this was not a real problem (despite the hierarchical influences mentioned above), an observation that probably reflects the acute sensitivities within the system around organizational issues (Cohen et al., 2013). Using two methods together provides a better view of the complexities of SIH than would be the case if only one method was implemented.

Our experience demonstrates that these two methods contributed considerably to identifying the issues, informing decision-making, and also to defining the types of actions that can be implemented to introduce the tool and support health professionals in this particular context. The FGs surpassed the CM by generating much more detail on concrete and operational considerations for adapting the tool (format, level of language for certain specified items, definitions, missing themes) and practical resources to be put in place to facilitate adoption in the given context (e.g. methodological support based on actual projects). The FG results also showed that implementing the tool should not be the responsibility of any one individual in an organization or any one role but should involve all stakeholders thereby removing the obstacle that organizational silos present to horizontal and vertical integration of the tool within the system (closer ties between local and regional levels) and intersectoral collaboration.

4.2. *Representing participants' points of view*

The CM method is widely acknowledged as stronger at representing the perspectives of multiple stakeholders and mitigating "*representation biases that are more likely to be introduced during less structured activities such as focus groups*" (authors' translation) (Dagenais, Ridde, Laurendeau, & Souffez, 2009). The fact that the data and their interpretation are generated by the participants themselves is a very valuable feature of the method: "The critical advantage of this approach is that the perspective of individuals is collected in a manner that is not influenced or biased by the researcher nor influenced by other, and at times dominant, group members" (Buchbinder et al., 2011). In fact, this is one advantage of the CM method over FGs: "What distinguishes concept mapping from focus groups is the second critical feature of this method: the direct expression of participants' voices with minimal interpretation by the researchers" (Campbell & Salem, 1999). This view is more nuanced in the context of our research and raises the issues of the facilitator's role and of the temporality of the CM process. Our experience demonstrates that, although the innovative nature of the technique made it easier to recruit participants who were curious about the CM method, their freedom of expression was very dependent on the facilitator's ability to get the more reticent to speak out. Indeed, the facilitator's skill was critical to maintaining the meeting's balance and to encourage the more reserved individuals to participate, while retaining some control over those who spoke out more easily and frequently (Bigné, Aldas-Manzano, Küster, & Vila, 2002). While the CM technique may have seemed to mitigate the effects during the data collection, we had concerns regarding the capacity to ensure equivalent relative weights to individual points of view when interpretation was conducted within a group context. This consideration is especially important in the organizational context within which our research was conducted, where hierarchical relationships and other authority and power issues are strong, not highly visible to the researchers, and sometimes downplayed by the participants. Moreover, tension among participants surfaced when it came to discussing the meaning of the clusters and to reaching a consensus on naming them. Participants did not recognize their individual work in the collective results produced after statistical analysis of the CM. It seemed that for some the process was not intuitive, and there may have been some confusion during the process, especially when sorting the elements and interpreting the cards (Kolb & Shepherd, 1997). It was thus difficult for the facilitator to lead them to a more general overview of the concepts: "*The participants do not necessarily recognize their individual work in this final visual representation. They must therefore step away from their own frameworks to adopt a representation that encompasses the whole*

conceptual domain and all participants' perspectives; this leap from the individual to the group can be difficult" (authors' translation) (Felx et al., 2014). Additionally, there was nearly continuous tension among participants when it came to agreeing on the cluster titles, as some argued in favour of simple wording reflecting the reality of practice, while others drew on a more conceptual vocabulary, borrowing professional, technical, or academic terminology. This challenge can be seen in some cases by the number of titles put forward before a consensus was finally reached (see Table 2).

In the literature we consulted concerning CM, the tension we experienced with this group is not what is usually reported; authors typically highlight the democratic aspect of the process of producing and naming clusters (Herman, Onaga, Pernice-Duca, Oh, & Ferguson, 2005; Linton, 1989; O'Campo, Burke, Peak, McDonnel, & Gielen, 2005; Valentine, 1989). As time went on, we had the impression that some participants gave way to others, which led us to question whether we had succeeded in reaching a consensual articulation of the concerns of the different groups of actors. It is always difficult for researchers to decipher the influence of hierarchical relationships, professional cultures, or the presence of strong leaders during this stage. Finally, the exchanges during this stage seemed to lag a bit and to be less stimulating than the dynamic discussions generated during the focus groups three months earlier. As a result, facilitating this stage demanded much more skill on the moderator's part. This stage should be planned with care (Felx et al., 2014), especially if it cannot be conducted continuously with the previous ones.

As a result of this experience several opportunities for improvement became apparent. Overall, attention should be given to the guidelines and objectives for ordering the activities, to clarify what is expected from participants at each stage of the project. When labeling the final cluster labels during the results validation and interpretation stage, one could experiment with having the participants debate draft titles rather than having to create them themselves, to see whether this format would encourage more free-flowing, reasoned exchanges on a subject as complex as SIH. Finally, another possibility for integrating a more free-flowing and reasoned exchanges might be to change the order of group activities by starting with the FG discussions, followed by brainstorming (CM) to refine and synthesize the themes raised during discussions into short statements for sorting and rating. However, we would have to monitor the risk of this new sequence undermining CM's potential by limiting the expression of participants whose ideas are not widely shared or represent a minority view during the initial FG activity.

5. Conclusion

Driving change with respect to equity is a sizeable challenge for public health organizations that have received repeated calls to action for many years. As it is, our analysis of the processes and of the main results generated by this mixed methodology shows that using a hybrid, integrated research design is a richer way to address the complexity of questions arising in intervention and planning settings. By integrating methods and involving individuals in multiple roles (health professionals & managers) and at multiple levels (regional & local), we achieved a sophisticated understanding of the issues concerning the implementation of a health equity tool and the corresponding challenges of achieving health equity. Integrating concept mapping and focus group processes produced relevant data and a deeper, operational, and contextualized understanding of the research questions while taking into account the diversity of professional and organizational cultures. Despite the problems encountered, this methodology combined the strengths of quantitative and qualitative methods and overcame

the respective limitations of CM and FGs. The results thus obtained may now support the process of organizational and professional change needed to drive a culture of public health focused on equity.

Author notes

This research project was approved by the research ethics committee of Université Laval (REF2014-053). All participants were informed of the research content and objectives, participated on a voluntary basis and signed a consent form.

Acknowledgements

References

Bigné, J. E., Aldas-Manzano, J., Küster, I., & Vila, N. (2002). The concept mapping approach in marketing: An application in the travel agencies sector. *Qualitative Market Research: An International Journal*, 5, 87–95.

Borgen, F., & Barnett, D. (1987). Applying cluster analysis in counseling psychology research. *Journal of Counseling Psychology*, 34, 456–468.

Brassolotto, J., Raphael, D., & Baldeo, N. (2013). Epistemological barriers to addressing the social determinants of health among public health professionals in Ontario Canada: A qualitative inquiry. *Critical Public Health*, 24, 321–336.

Buchbinder, R., Batterham, R., Elsworth, G., Dionne, C. E., Irvin, E., & Osborne, R. H. (2011). A validity-driven approach to the understanding of the personal and societal burden of low back pain: Development of a conceptual and measurement model. *Arthritis Research & Therapy*, 13, .

Campbell, R., & Salem, D. A. (1999). Concept mapping as a feminist research method: Examining the Community Response to Rape. *Psychology of Women Quarterly*, 23, 65–89.

Carter, J., Enyedy, K., Goodyear, R., Arcinue, F., & Puri, N. (2009). Concept mapping of the events supervisees find helpful in group supervision. *Training and Education in Professional Psychology*, 3, 1–9.

Cohen, B. E., Schultz, A., McGibbon, E., VanderPlaat, M., Bassett, R., GermAnn, K., et al. (2013). A conceptual framework of organizational capacity for public health equity action (OC-PHEA). *Canadian Journal of Public Health*, 104, e262–266.

Commission on the Social Determinants of Health (2008). *Closing the gap in a generation: Achieving health equity through action on the social determinants of health, Publishing.* Geneva, Switzerland.

Cook, T. D. (1985). Post-positivist critical multiplism. In L. Shotland, & M. Mark (Eds.), *Social science and social policy,* Publishing, Beverly Hills (CA).

Creswell, J. W., & Plano Clark, V. (2006). *Designing and conducting mixed methods research.* Thousand Oaks: Sage Publications.

Dagenais, C., Ridde, V., Laurendeau, M., & Souffez, K. (2009). Knowledge translation research in population health: Establishing a collaborative research agenda. *Health Research Policy and Systems*, 7, 28.

Dagenais, C., Pinard, R., St-Pierre, M., Briand-Lamarche, M., Cantave, A., & Péladeau, N. (2015). Using concept mapping to identify conditions that foster knowledge translation from the perspective of school practictionners. *Research Evaluation*. http://dx.doi.org/10.1186/1478-4505-7-28.

Dahlgren, L., Emmelin, M., & Winkvist, A. (2007). *Qualitative methodology for international public health.* Umeaa International School of Public Health.

Direction de la santé publique de Montréal (2011). *Les inégalités sociales de santé à Montréal, le chemin parcouru.* Montréal (Qc): Rapport du directeur de santé publique 2011, Publishing pp. 21.

Direction de la santé publique de la Capitale Nationale (2012). *Comprendre et agir autrement pour viser l'équité en santé dans la région de la Capitale-Nationale.* Québec (Qc): Rapport du directeur de santé publique 2012, Publishing pp. 161.

Direction de santé publique de la Montérégie (2007). *Pour des communautés en santé: des environnements sociaux solidaires.* Longueuil (Qc): Rapport de la directrice de santé publique 2007, Publishing pp. 56.

Direction de santé publique de la Montérégie (2013). *Plan d'action régional 2013-2015.* Longueuil (Qc): Publishing2013 pp. 78.

Direction générale de la santé publique du ministère de la Santé et des Services sociaux (2008). *Programme national de santé publique 2003-2012.* Québec (Qc): Publishing2008 pp. 126.

Emmel, N. (2013). *Sampling and choosing cases in qualitative research: A realist approach.* Sage Publications.

Felx, A., Kane, M., Corbière, M., & Lesage, A. (2014). La cartographie de concepts: Une représentation visuelle et spatiale pour décrire les ressources résidentielles en santé mentale. In M. Corbière, & N. Larivière (Eds.), *Méthodes qualitatives, quantitatives et mixtes dans la recherche en sciences humaines, sociales et de la santé* (pp. 547–576).Québec (QC): Publishing.

Guichard, A., & Ridde, V. (2010). In L. Potvin, M. Moquet, & C. Jones (Eds.), *Une grille d'analyse des actions pour lutter contre les inégalités sociales de santé* (pp. 297–312).Saint-Denis (France): Réduire les inégalités sociales en santé Publishing.

Herman, S., Onaga, E., Pernice-Duca, F., Oh, S., & Ferguson, C. (2005). Sense of community in clubhouse programs: Member and staff concepts. *American Journal of Community Psychology*, 36, 343–356.

Hills, M. D., Carroll, S., & O'Neill, M. (2004). Vers un modèle d'évaluation de l'efficacité des interventions communautaires en promotion de la santé: compte-rendu de quelques développements Nord-américains récents1. *Promotion & Education*, 11, 17–21.

Kahneman, D. (2011). A machine for jumping to conclusions. *Thinking, fast and slow*. Publishing pp. 499.

Kane, M., & Trochim, W. (2007a). *Concept mapping for planning and evaluation, vol. 50,* Sage Publications.

Kane, M., & Trochim, W. M. K. (2007b). *Concept mapping for planning and evaluation.* Thousand Oaks, CA: Sage Publications.

Kitzinger, J. (1994). The methodology of Focus Groups: The importance of interaction between research participants. *Sociology of Health and Illness*, 16, 103–121.

Kitzinger, J. (1995). Qualitative research. Introducing focus groups. *BMJ*, 311, 299–302.

Kolb, D. G., & Shepherd, D. M. (1997). Concept mapping organizational cultures. *Journal of Management Inquiry*, 6, 282–295.

Krueger, R. A. (1994). *Focus groups: A practical guide for applied research.* Sage Publications.

Kruskal, J., & Wish, M. (1978). Muldimensional scaling. *Positionnement multidimensionnel.* Beverly Hills: Sage.

Lavis, J., Boyko, J., & Gauvin, F.-P. (2014). Evaluating deliberative dialogues focussed on healthy public policy. *BMC Public Health*, 14, 1287.

Linton, R. (1989). Conceptualizing feminism, clarifying social science concepts. *Evaluation and Program Planning*, 12, 25–29.

Loi sur la santé publique, 2001. Loi sur la santé publique, in: Nationale, A. (Ed.), Publishing.

Masuda, J., Zupancic, T., Crighton, E., Muhajarine, N., & Phipps, E. (2014). Equity-focused knowledge translation: A framework for reasonable action on health inequities. *International Journal of Public Health*, 59, 457–464.

Mendell, A., Dyck, L., Ndumbe-Eyoh, S., & Morrison, V. (2012). *Outils et approches pour évaluer et soutenir les mesures de santé publique en matière de déterminants de la santé et d'équité en santé.* Publishing pp. 30.

Molleman, G., Ploeg, M., Hosman, C., & Peters, L. (2006). Preffi 2.0- a quality assessment tool. *Promot Educ*, 13, 9–14.

National Collaborating Centre for Determinants of Health (2013). *Let's Talk: Public health roles for improving health equity.* Antigonish (N.-É): Publishing pp. 6.

National Collaborating Centre for Determinants of Health (2014). *Boosting momentum: Applying Knowledge to advance health equity.* Antigonish, NS: Publishing.

O'Campo, P., Burke, J., Peak, G. L., McDonnel, K. A., & Gielen, A. C. (2005). Uncovering neighbourhood influences on intimate partner violence using concept mapping. *Journal of Epidemiology & Community Health*, 59, 603–608.

Orenstein, M., & Rondeau, K. (2009). *Scan of health equity impact assessment tools.* Calgary, Alberta: Publishing.

Péladeau, N., & Dagenais, C. (2012). Concept mapping internal validity: A case of misconceived mapping? *26th annual conference of the american evaluation association, publishing,* .

Patton, M. Q. (1990). *Qualitative evaluation and research methods*, 2nd ed. New York: Sage Publications.

Patton, M. Q. (2002). *Qualitative research & evaluation methods.* SAGE Publications.

Pauly, B., MacDonald, M., O'Briain, W., Hancock, T., Perkin, K., Martin, W., et al. (2013). *Health equity tools.* Victoria B .C: Publishing.

Pluye, P., & Hong, Q. N. (2014). Combining the power of stories and the power of numbers: Mixed methods research and mixed studies reviews. *Annual Review of Public Health*, 35, 29–45.

Pope, C., Mays, N., & Popay, J. (2007). *Synthesizing qualitative and quantitative health research: A guide to methods.* Berkshire, Great Britain: Open University Press.

Posavac, E. J., & Carey, R. G. (1992). *Program evaluation: Methods and case studies*, 2nd ed. Englewood Cliffs (NJ): Prentice-Hall.

Public Health Agency of Canada (2008). *The Chief Public Health Officer's report on the state of public health in Canada.* Ottawa, Ontario: Publishing.

Signal, L., Martin, J., Reid, P., Carroll, C., Howden-Chapman, P., Ormsby, V. K., et al. (2007). Tackling health inequalities: Moving theory to action. *International Journal for Equity in Health*, 6, 12.

Southern, D. M., Batterham, R. W., Appleby, N. J., Young, D., Dunt, D., & Guibert, R. (1999). The concept mapping method. An alternative to focus group inquiry in general practice. *Australian Family Physician*, 28(Suppl. 1), S35–40.

Touré, E. H. (2010). Réflexion épistémologique sur l'usage des focus groups: fondements scientifiques et problèmes de scientificité. *Recherches Qualitatives*, 29, 5–27.

Trochim & McLinden (2017). Introduction to a special issue on concept mapping. Evaluation and Program Planning Vol. 60. 166–175.

Tyler, I., Amare, H., Hyndman, B., & Manson, H. (2014). *Health equity assessment: Facilitators and barriers to application of health equity tools*. Toronto, ON: Publishing.

Valentine, K. (1989). Contributions to the theory of care. *Evaluation and Program Planning, 12*, 17–24.

WHO (2011). Rio political declaration on social determinants of health. *World conference on social determinants of health publishing,* pp. 7.

Waszak, C., & Sines, M. C. (2006). Mixed methods in psychological research. In A. Tashakkori, & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research*, Thousand Oaks: Publishing pp. 912.

Wiener, R. L., Wiley, D., Huelsman, T., & Hilgemann, A. (1994). Needs assessment. Combining qualitative interviews and concept mapping methodology. *Evaluation Review, 18*, 227–240.

Wilson, H. S., & Hutchison, S. A. (1991). Triangulation of qualitative methods: Heideggerian hermeneutics and grounded theory. *Qualitative Health Research, 1*, 263–276.

World Health Organization (1986). Ottawa charter for health promotion: First international conference on health promotion. *Canadian Journal of Public Health, 77*, 425–430.