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A model for common ground development to support collaborative health communities

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ABSTRACT

Common ground is necessary for developing collaboration as part of building resilience for public health preparedness. While the importance of common ground as an essential component of collaboration has been well described, there is a need for studies to identify how common ground develops over time, across individual and group dimensions, and the contexts that influence its development. This paper studied common ground development in three Canadian communities between October 2010 and March 2011 through a project on capacity building for disaster management. Disaster management requires the integration of paid and volunteer participants across public and private sectors and is therefore a good domain to study common ground development. We used directed qualitative content analysis to develop a model of common ground development over time that describes its progression through coordinative, cooperative and collaborative common ground. We also identified how common ground develops at micro (individual) and macro (group) levels, as well as how agency, technology and geographical contexts influence its development. We then use the four phases of disaster management to illustrate how our model can support longitudinal common ground development. Our findings provide useful insight to enable proactive development of common ground in collaborative health communities.

1. Introduction

Collaboration is an essential part of health delivery both at clinical (i.e. treating individuals) and public health levels. However, there is a need to better understand collaborative practices so we can design solutions to support it. Common ground (CG), defined as the shared knowledge, language, and beliefs that two or more agents need to have for communication to occur (Clarke and Brennan, 1991; Clark, 1996), is an essential part of successful collaboration (Coiera, 2000; Hertzum, 2008; Kuziemsky and Varpio, 2010; Collins et al., 2012).

The relationship between CG and collaboration has evolved substantially over the years. Much of the early work on CG focused on its role as a communication facilitator (i.e. Clark, 1996).Coiera (2000) suggested the level of CG could determine whether computer mediated or face to face communication should be used in the clinical communication space. Subsequent research in healthcare expanded our knowledge of CG beyond communication and identified its role in collaborative team interactions (Collins et al., 2012). The use of CG facilitates team communication (Convertino et al., 2008, 2009), assists in the creation of a shared information or mental models to represent collaborative situations (Thraen et al., 2012), while also aiding individual and public health needs (O'Sullivan et al., 2013).

However, in complex collaboration, CG is more than just a conversation, shared information, or a shared model. These aspects are all important parts of CG, but CG needs to be seen as a dynamic process that drives collaboration in order to generate actions and solutions to problems (Potts and Catledge, 1996; Convertino et al., 2009, 2011). Both clinical healthcare (Kuziemsky and Varpio, 2010) and population health studies (Carroll et al., 2009) have emphasized the importance of understanding CG development as part of collaborative practice. CG does not form independent of its environment, but rather is impacted by people, processes and other contexts where it is used (Tveiten et al., 2012). Vocabulary and knowledge are the minimal requirements for establishing CG, but to truly integrate people, processes and policies; CG must focus on

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relationships, trust and understanding contextual variations (Kuziemsky and Varpio, 2010). CG typically does not develop as a random process, but instead there are specific moments when it is needed, and different factors that support and impair its development (Kuziemsky and Varpio, 2010; Collins et al., 2012). Regardless of the moment or factors impacting CG development, we know it is developed by acquiring and exchanging information, as part of negotiating and conducting collaborative tasks (Carroll et al., 2009).

A key challenge in cross sector collaborative tasks such as public health endeavours is the integration of disparate data and processes that can span micro (individual) and macro (group) perspectives, and public and private agencies (Carroll et al., 2009; Ansell et al., 2010; Campos et al., 2011; Flores et al., 2014). Developing CG in collaborative health environments (i.e. clinical, hospital, disaster response) is challenging because of the need to integrate different types of agents, information, policies, and procedures (Collins et al., 2012; O'Sullivan et al., 2013). Disaster management is a particularly good domain to study integrative aspects of public health CG because it requires the integration of various categories of agents with geographical, governance, training, and cultural environments (Ansell et al., 2010; Tveiten et al., 2012). One example of integrative public health CG is paid and volunteer agents (Waugh and Streib, 2006) and how they engage with and influence policy (i.e. access to resources or information) to impact their ability to exert power and influence within collaborative initiatives. Another example is the constraints and policy decision making authority granted to government and non-government agents. These contexts are made more complex because disaster management has four distinct phases: mitigation/prevention, preparedness, response, and recovery, with each phase presenting unique integration challenges. While multi-level integration and CG development has not been explicitly studied, it is has been shown that integrating non-governmental health organizations (NGOs) and government public health agencies can contribute significantly toward the development of resilient and sustainable disaster preparedness programs (Khan, 2008).

Disasters, such as the 2010 earthquake in Haiti, the 2011 earthquake, tsunami, fires and nuclear disaster in Japan, and the Lac-Megantic train explosion in 2013 in Quebec, provide examples of how collaborative action is required to minimize damage and long term negative effects after adverse events. With respect to disaster management a proactive approach is needed to build resilience for public health preparedness (Flores et al., 2014). However, the details of public health emergency preparedness is overall not well defined (Gibson et al., 2012) and a lack of attention to development and operationalization details of collaboration can have a detrimental effect on disaster response (Waugh and Streib, 2006).

We cannot plan the disaster but we can plan the response to it. Therefore, we suggest that for *in time critical task moments*, like disaster response, CG must be formed ahead of time as much as possible. We see two key shortcomings in existing CG research. First of all, it focuses on 'in the moment CG' and does not account for CG as a dynamic entity that is developed proactively and will form and reform as people, policies and user needs evolve. Secondly, existing work has largely ignored the contextual aspects of CG such as timeframe, leadership, mixture of people, and how tasks are conducted across different collaborative moments. CG is a product of its environment and the development of CG will not be the same in all settings. This paper addresses the above shortcomings and presents a model of CG development over time and across different moments of disaster management. We also identify micro (individual) and macro (group) aspects and contextual factors that impact its development. Finally, we use the phases of disaster management to illustrate how our model can support longitudinal CG development.

The paper has five sections. Section one was the introduction and background material. In section two we describe the study design including the data sources and data analysis. In section three we describe the results consisting of a CG cycle, individual and group development, and the contextual factors that influence CG development. We also use the four phases of disaster management to illustrate how our findings can support longitudinal CG development. Section four discusses our findings, implications for collaborative practice, next steps, and limitations. We conclude with a synopsis of the key outcomes from our research.

2. Study design

2.1. Data sources

Between October 2010 and March 2011 we studied disaster management in three Canadian communities. Partnerships with these target communities were established to represent different geographic regions (Nova Scotia, Ontario, Alberta), one rural and two urban settings, various levels of engagement in preparedness planning (e.g. established memorandums of understanding disaster response with one provincial authority; large scale disaster drill), and experience with different hazards (e.g. storms, flooding, ice storms). These three communities were predominately English-speaking.

A total of 98 participants took part in the study across 6 focus group discussions (FGD's). Each participant attended just one FGD in their community. The focus groups ranged from $n = 9$ to $n = 25$, with approximately the same distribution and participant mix across each setting. Participants were a mixture of volunteers, paid staff and managers, and represented the sectors of disaster and emergency management, health and social services, and other community groups which support people with disabilities and other high risk populations. For example, dedicated disaster management professionals (e.g. emergency managers), public tri-services (e.g. firefighters, police, paramedics), social work and community liaisons, and other essential services (e.g. hydro, transportation, food bank) were represented in each community. Each participant was asked to sign a consent form approved by the university research ethics committee before attending a FGD. All FGD's were conducted in English and was approximately 4.5 h in duration.

The FGDs addressed all four phases of disaster management (i.e. mitigation/prevention, preparedness, response, and recovery). Two FGDs were held in each target community, using a Structured Interview Matrix (SIM) format (Chartier, 2002; O'Sullivan et al., 2015). The SIM format is structured around 3 steps: 1) One on one interview rounds, where each table assigned a unique question; 2) small group deliberation to summarize the interview responses; and 3) plenary group discussion of all questions. The SIM format provides an opportunity for more participation in each session, both in terms of the number of participants but also in terms of opportunities to contribute. The stepwise data collection enables each voice to be heard and represented in the data (O'Sullivan et al., 2015).

During the interview rounds, the participants at each table were assigned a single question to ask participants from the other tables. Each table had a different question. Sample questions included: What external opportunities could your community take advantage of to enhance preparedness for, response to, and recovery *from a disaster*? And what external threats (challenges or barriers) could impact your community's preparedness for, response to, and recovery from a disaster? The participants were instructed to ask people from the other tables their particular question, and when it