Building resilience: The relationship between information provided by municipal authorities during emergency situations and community resilience

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ABSTRACT

Community resilience denotes a community's capacity to lead itself in order to overcome changes and crises. Leadership is a central element of community resilience. One of the responsibilities of municipal authorities and leadership during emergencies is to provide effective information that meets the population's needs. This cross-sectional study presents the relationship between satisfaction with information provided by the local municipality and community resilience scores measured using the Conjoint Community Resilience Assessment Measure (CCRAM). The study included 1139 adults (mean age 40.7 years) living in small to midsized communities. The CCRAM score was positively correlated with satisfaction with the information received from the municipality ($r(1139) = 0.528$, $p < 0.001$). Linear regression modeled the dependent variable CCRAM score. After adjusting for general covariates, municipal information satisfaction was positively associated with the CCRAM score (B = 0.265, $p < 0.001$, 95% CI = 0.231–0.299), meaning that the more suitable the information was for population needs, the higher the community resilience. These results highlight the importance of the information provided by the municipal authorities to the population as a means to develop or enhance resilience for emergencies. This information is of utmost importance for decision makers and local leadership when developing policies for resilience building and planning communication with the population.

1. Introduction

Disasters and emergencies expose the civilian population to damage, injury and various challenges. During the first hours of large scale emergency situations, the population often has to cope on its own with providing urgent lifesaving care. In addition, the role played by the community is a key mediator in the subsequent mental health impact on populations exposed to ongoing emergencies (Beiser et al., 2010) and forced migration experiences (Siriwardhana et al., 2014). A major strategy for coping with emergencies is to increase the community's resilience capacity (Buergelt and Paton, 2014). Community resilience denotes a community's ability to lead itself in order to overcome changes and crises (Leykin et al., 2013). Community resilience is comprised of factors such as leadership, collective efficacy, social

cohesion and place attachment. Physical components such as infrastructure and resources are additional aspects (Cutter et al., 2008; Cohen et al., 2013; Ungar, 2011).

1.1. Building of community resilience capacity

Local, international and global frameworks have been developed over the last decade with the aim of achieving improved coping with emergencies. These frameworks tackle the problem from different perspectives. Some seek to shape the resilience approach itself (e.g. Strategic National Framework on Community Resilience (UK Cabinet Office, 2011)). Others integrate resiliency within a broader structure of societal, economic, infrastructure or disaster risk reduction (e.g. Sendai Framework for Disaster Risk Reduction (UNISDR, 2015)). These frameworks differ one from the other, but all agree on the need to incorporate different arenas, including the public arena, and to establish ongoing action over the crisis cycle, encompassing the daily routine, the crisis, and the rehabilitation period. The Sendai Framework for Disaster Risk Reduction represents a step in the direction of global policy coherence with explicit reference to health, development, and climate change

Abbreviations: CCRAM, Conjoint Community Resilience Assessment Measure.
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(Aitsi-Selmi et al., 2015).The Planning Guide (NIST, 2015) provides a methodology for local government to bring together all of the relevant stakeholders to establish performance goals to maintain the social and economic fabric when disruptive events occur. The Strategic National Framework on Community Resilience is intended to provide the national statement for how individual and community resilience can work. It should be relevant to all hazards and threats, and all communities. Over all those frameworks, there is agreement regarding the importance of the resiliency approach for dealing with crises, especially at the local level.

There is no clear consensus in the literature about the ways to strengthen the resilience of a community. The lack of empirical research (Castleden et al., 2011; Chandra et al., 2010) and the diverse disciplines that are involved hamper and complicate developing and understanding mechanisms for enhancing community resilience. Generally, the common perception is that after determining the components of a community's resilience, enhancing them will lead to building its capacity. The concept of community resilience is discussed on many levels (Wilson, 2012). According to Canyon et al. (2015), the focus of enhancing resilience to changes must be on understanding and developing local-level capacity to adapt, respond to and describe the institutional frameworks. One of the core elements of community resilience at the local level is leadership (Cox and Perry, 2011; Castleden et al., 2011; Wilson, 2012; Ayala et al., 2016).

Leadership plays a critical role in industrial, educational, military or social arenas. There are hundreds of definitions of the term leadership (Kouzes and Posner, 2006). According to Bass and Stogdill (1990), effective leadership is the interaction among members of a group that initiates and maintains improved expectations and the competence of the group to solve problems or attain goals. Types of leaders differ depending on role and functional or institutional differences (Bass and Stogdill, 1990). Kouzes and Posner (2006) mentioned that leadership is not just about leaders. Nor is leadership about some position or place in an organization or community. In today's world, leadership must be everyone's interest. Many types of leadership have roles that modulate the resiliency of a community in the face of emergencies. In this particular study, we focused on the local municipal authority. Moreover, the character of the municipal authorities is defined as a function of community type and as reflecting the size of the community: small communities of up to 10,000 inhabitants and midsize communities of up to 50,000 residents. Commonly, among small communities, the municipal authority provides services to several homogenous communities that are geographically close. Medium-size towns, on the other hand, are heterogeneous.

The municipal authorities are considered a cornerstone in the leadership paradigm (Amundsen, 2012). One of the functions of municipal authorities concerns the provision of effective information that meets the population's needs.

1.2. Transparent communication between leaders and populations

The role of transparent communication between leaders and populations has been noted in many domains, including psychology, sociology and administration. Important as it is during routine times, such communication assumes immense importance during emergencies. Fairbanks et al. (2007) stress the importance of transparency for the very existence of democratic governance. According to the latter, in addition to communication elements such as openness, the use of a variety of channels to disseminate information, and seeking feedback from public agencies, there is a need to involve principles of stakeholder management. Currently, the use of internet platforms and social media as channels of communication between the government and the public is increasing constantly, leading to improved communication, especially in crises (Ulmer et al., 2013). Piotrowski and Van Ryzin (2007) describe the impact of e-government and e-governance on engaging citizens in the process of democracy and rebuilding trust-based relations between citizens and state. The possibilities opened up by the development of

Table 1
Major study population characteristics with mean CCRAM and municipal information provision scores.

Variable	N	%	CCRAM score	p-Value (t-test or ANOVA)	Municipal information ranking	p-Value (t-test or ANOVA)
Total	1139	100	3.5		3.3	
Gender						
Female	679	59.6	3.5	0.186	3.3	0.735
Male	422	37.1	3.4		3.3	
Family status						
In a permanent relationship	888	78.0	3.5	<0.001	3.4	<0.001
Not in a permanent relationship	231	20.3	3.2		2.9	
Community type						
Midsize town (up to 50,000)	518	45.5	3.0	<0.001	3.0	<0.001
Small community (up to 10,000)	621	54.5	3.8		3.5	
Income						
About average	316	27.7	3.5		3.3	
Below average	317	27.8	3.0	<0.001	3.0	<0.001
Above average	424	37.2	3.7		3.4	
CERT volunteer						
No	974	85.5	3.4	<0.001	3.2	<0.001
Yes	139	12.2	3.9		3.6	
Physical or mental disability						
No	950	83.4	3.5	0.005	3.3	0.912
Yes	178	15.6	3.3		3.3	
Previous involvement in an emergency situation						
No	555	48.7	3.4	0.165	3.2	0.077
Yes	395	34.7	3.5		3.4	

two sided communication are significant. Indeed, two sided messages have been found to command enhanced credibility and persuasiveness as compared with one sided messages (O'Keefe, 1999). Chen (2009) noted the need for the "institutionalization" of public relations as a strategic-management function relating to effective communication in crises. Special attention has been given to the role of communication in the building of trust between citizens and public. According to Bonelli et al. (2016), trust can promote compliance and cooperation, and it is a fundamental construct for social interaction, especially in the context of risk perception. Designing effective communication strategies and thereby promoting cooperation between citizens and institutions is of unique importance (Bonelli et al., 2016). Hilyard (2008) points to the trust that is manifested between institutes and public during emergency situations, reflecting the willingness of the public to obey orders issued by the authority in order to mitigate the consequences of the emergency (Hilyard, 2008). Ivanov et al. (2016) found inoculation to be effective as a strategy for pre-crisis messaging. Olsson et al. (2015) reported that honest communication between the public and authorities creates a dialog which in turn enhances community resilience in dealing with extreme situations.

Based on the value of the information provided by the authorities, Girard et al. (2014) analyzed the disaster response communicated to the public in near real time, in order to identify potentially critical disaster response information when it can still be modified. Sharing information through various channels, including social media, was found to have significant positive impact (Neely, 2014; Houston et al., 2014). In other studies, information is perceived as an essential resource for community disaster readiness (Uscher-Pines et al., 2013; Bajayo, 2012).