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Research Article

Local Public Health Departments' Satisfaction with Community Engagement for Emergency Preparedness

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Abstract

Planning for biological emergencies whether natural (pandemic) or human-induced requires local public health departments partnering with non-government community- and faith-based organizations. Research on health departments' capacity in the realm of biological emergencies has mainly focused on surveillance systems, and epidemiological and laboratory competencies. Little attention has been paid to health department capacities for fostering and maintaining good relations with community organizations to serve local populations in emergencies, such as providing vaccines in public health crises and addressing fear and stigma. Our paper is addressing this gap. In a national study of local public health departments, we investigated satisfaction with community engagement activities for emergency preparedness and response planning. At the national level, preparedness activities that concern the mobilization of community resources were rated as most successful. Findings did not vary by county size. Reported satisfaction with resource mobilization activities was related to the amount of time emergency preparedness coordinators worked in local health departments, their gender, perceived belief that such activities are beneficial, and the type of area the health department serves. Emergency coordinators who reported more satisfaction with resource mobilization tend to have worked in a health department for 5 – 10 years, worked in an urban rather than rural area, and are more likely women. Interestingly, coordinators who believed preparedness activities are highly beneficial for community emergency readiness reported significantly lower satisfaction with resource sharing compared to those who held lower belief it its benefit.

Keywords: Emergency Preparedness: Biosafety: Local Health Department: Community Organizations

Abbreviations

LHD: Local Health Department; CBO: Community-Based Organization; FBO: Faith-Based Organization; NGO: Non-Government Organization; ADEPT: Assessment for Disaster Engagement with Partners Tool

Introduction

In planning for biological emergencies, collaborative partnerships between Local Health Departments (LHDs) and community- and faith-based organizations are critical [1-5]. Strong community partnerships have facilitated efficient distribution and administrations of vaccines in emergency situations as well as helped reduce fear and stigma among frightened populations in public health emergencies [1-5]. For instance, in October 2012, a total of 18 faith-based and non-profit organizations played an invaluable role in providing free-of-charge influenza vaccines to 430 people in Winnebago County, IL, focusing on vulnerable populations [1]. This community-wide collaborative effort serves as a model for effective mass disaster prophylaxis in a public health crisis [1]. As a response to the H1N1 influenza pandemic, approximately 40,000 doses of vaccines were used to immunize the population served by the Palm Beach County Health Department in Florida in a collaborative partnership with their local community pharmacies and pharmacy-based retail health clinics between September 2009 and March 2010 [3]. During the same time period, almost 200,000 people received the H1N1 vaccine as a result of a collaborative effort between the Los Angeles County Department of Public Health and local community organizations [4]. During the SARS outbreak in Toronto, the Chinese-Canadian community organizations partnered up to help the Asian-Canadian population not only fight against the disease but also reducing population anxiety, documenting a crucial role of ethnic community organizations in public health preparedness [4]. Lack of collaborative partnerships between LHDs and Non-Government Organizations (NGOs) can lead to confusion, anger and stigma, such as that during a large Ebola outbreak in Uganda in 2000-2001 [5].

Furthermore, current strategies toward building community resilience to disasters emphasize active engagement between responding public health agencies and community organizations [6-12]. For example, the Federal Emergency Management Agency's Whole Community framework and the Centers for Disease Control and Prevention's *Public Health Preparedness Capabilities* conceptualize of engagement between responding agencies and community-based organizations as crucial toward building community disaster resilience [6,7]. Active and sustained connection between local or regional organizations and local public health departments is vital to effective coordination of emergency preparedness, response, and recovery [6-8]. Increased focus is currently placed on the value of community- and faith-based organizations as active members in

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the process of local emergency mitigation activities [5,6]. It has been shown that in the time of emergency, it is common for residents who need assistance and resources to reach out first to their local community-based organizations for help [8-11]. As a liaison between local government and the population served, local community- and faith-based organizations can be instrumental in facilitating effective exchange of information and resources toward building community disaster resilience through community outreach and coordination of local activities. Thus, good working relationships between local health departments and community-based organizations are likely to aid the local government coordinate their mitigation efforts before, during, and after disasters. However, local health departments may lack sufficient funding to pursue the development of such partnerships, or they may place a lower priority on activities that foster and maintain community partnerships [8,12-14,15]. This finding applies at the national level as well as internationally. In a global study on pandemic influenza preparedness that included 558 participants and 137 observers from 14 countries (including Asia, the Middle East and Africa), representatives from the countries' government sectors (health, agriculture, defense and environment) reported that local government collaborations with NGOs are inadequate in addressing biosafety objectives, and improved community partnerships are needed for pandemic influenza preparedness [16].

Within local public health departments in the United States, disaster preparedness coordinators have the executive role in collaborative engagement with community- and faith-based organizations for emergency preparedness, response and recovery [8,15,17]. Disaster coordinators are typically responsible for community outreach, including the initiation, development, and formation of partnerships with local community- and faith-based organizations. They are also instrumental in mobilizing valuable resources for emergency preparedness and response planning [8,15,17]. Further, they are indispensable in building organizational capacity, such as development and dissemination of disaster plans, competencies, and personnel training [8,15,17].

Research on local public health department capacities to respond to biosafety emergencies has mainly focused on surveillance systems, and epidemiological and laboratory competencies. Little has been written about health department capacities for fostering and maintaining effective partnerships with community organizations to serve local populations in biological emergencies. Our paper is addressing this gap. To achieve and maintain biosafety at the local level as well as globally, it is crucial to develop and promote effective collaborative partnerships with community- and faith-based organizations, their leaders, stakeholders and local residents, and to pay attention to the needs of the local population as they define it [1-5].

Engagement between local government and community organizations can be conceptualized according to the types of collaborative activities between public health departments and local community organizations as well as conforming to the goals of the agencies involved [15]. Review of past research shows that efforts to evaluate such engagements using sound scientific methodology are sparse, mainly due to significant difficulty to obtain enough information that is needed to extract accurate description of such collaboration and generate valid conclusions. Based on extensive formative study of collaborative activities between local health departments and community- and faith-based organizations for disaster resilience, Glik et al. recently developed and validated an instrument that can be used to evaluate the type and frequency of engagement activities for disaster preparedness, response, and recovery into the Assessment for Disaster Engagement with Partners Tool (ADEPT) [15]. This tool serves as a conceptual and practically-applicable model for categorizing engagement activities into the following four domains: (1) communication outreach and coordination, (2) resource mobilization, (3) organizational capacity building, and (4) partnership development and maintenance [15]. Our current study adopted the four dimensions of ADEPT to assess the level of satisfaction with community engagement activities for emergency preparedness, response and recovery from the local public health department perspective. In particular, we were interested whether satisfaction varies among the four dimensions of ADEPT. Therefore, we examined the average satisfaction per ADEPT domain, tested differences in average success, and investigated possible predictors of success.

Findings will provide valuable quantitative information about the success of such collaborative activities from the perspective of the local health department and will allow for better understanding of what types of activities might be most useful for future collaborative efforts with community- and faith-based organizations.

Materials and Methods

Study methodology and participants

We conducted a national survey of disaster preparedness coordinators at local public health departments to study their collaboration with community- and faith-based organizations for community disaster resilience. To survey disaster coordinators, we used the National Association of County and City Health Officials (NACCHO) database of 2,864 Local Health Departments (LHDs) in the United States, and applied a probability-proportional-to-size sampling design to generate a stratified random sample of 750 LHDs. Within the LHDs we identified disaster coordinators through Internet search, and we confirmed the individual contact information through phone calls to all LHDs in the sample. The survey was administered via a web link imbedded in e-mail messages that were send to all study participants. Survey data were collected in 2011.

Local public health department disaster preparedness coordinators were asked a series of questions about their department's engagement activities with community- and faith-based organizations for emergency preparedness and response planning. We gathered information about the coordinators' demographic characteristics, their work in the department, as well as their evaluation of the collaboration with local community organizations, including the benefits and barriers to those collaborations. This paper addresses evaluation of satisfaction with emergency preparedness activities; therefore, the survey instrument description focuses on the relevant data. (Complete description can be found in prior paper) [15]. Twenty-five survey questions on which this study is based were organized into the four dimensions of ADEPT: (1) communication outreach and coordination, (2) resource mobilization, (3) organizational capacity building, and (4) partnership development and maintenance, in Sections 14-17. Section 14 corresponded to ADEPT domain (1);

Section 15 corresponded to ADEPT domain (2); and so forth. Each question within the four sections (14-17) had sub-questions that were carefully designed based on extensive formative research with key informants and case studies.

Sections 14-17a was used to assess respondents' participation in community engagement activities, and Sections 14-17b were used to assess satisfaction with those activities. When answering the survey questions, if respondents indicated their participation in any of the collaborative activities with community- and faith-based organization for disaster preparedness (Sections 14-17a), they were also asked a follow up question to rate the overall success of those activities (Sections 14-17b). For example, when a participant indicated that they organized Points of Dispensing (PODs) with a community- or faith-based organization for disaster preparedness, they were also asked how would they rate the overall success of those activities. The follow up questions were displayed automatically only for those respondents who indicated a positive response in one of the 25 questions that pertained to the community collaborative activities for emergency preparedness and response planning. Overall success was coded categorically into: 1=Poor, 2=Fair, 3=Good, 4=Excellent or 0=Not Sure and each question allowed for a single answer.

Statistical analysis

Participants' responses that indicated level of success with engagement activities were used to create individual satisfaction score that represents average satisfaction with community engagement activities for emergency preparedness and response per individual per ADEPT domain. The satisfaction score was imputed by summing the individual responses across each of the four dimensions of ADEPT and divided by the number of questions answered. This procedure resulted in an average score per each respondent per domain. For the purposes of quantitative analyses, level of success categories 1 through 4 were retained and category 0 was declared missing, as these data did not supply any meaningful information relevant to the research questions of this study. To compare and contrast participant satisfaction with community engagement activities across the ADEPT dimensions, we generated t-test pair wise comparisons of individual average satisfaction scores and obtained mean differences between each dimension pair as well as values of statistical significance. In assessing differences between the satisfaction scores, we adopted alpha < 0.05 to generate conclusions about statistical significance.

Subsequently, to predict what factors play a role in predicting a satisfaction score for an ADEPT domain, we generated regression models using the average satisfaction score as an outcome variable and used a backward selection modeling procedure, which was the most suitable method in assessing predictors of success and obtaining parameter estimates, as it minimized AIC.

Results

Descriptive analyses showed that key variables were approximately normally distributed (Table 1). Table 2 shows the aggregated responses to questions 14-17b, where participants reported their satisfaction with community engagement activities for emergency preparedness. Notably, the descriptive data in the resource mobilization column in Table 2 suggest high satisfaction with those activities, as the frequencies of success seem to accumulate toward the 'Excellent' and 'Good' responses, compared to the other three domains. Table 3 presents the average satisfaction scores per each of the four ADEPT dimensions. The average score for communication outreach and coordination, organizational capacity building, and partnership development appear similar, 2.53, 2.51, and 2.52, respectively. Whereas the average satisfaction score for resource mobilization was greater: 2.88 (Table 3). Subsequent pair wise comparisons of the average scores revealed statistically significant differences in means

Table 1: Characteristics of Local Health Department (LHD) disaster preparedness coordinators (N=273).

General characteristics	Frequency	% Distribution
Age		
18-25	3	1
26-35	47	17
36-45	62	23
46-55	80	30
56-56	71	26
65+	6	2
Gender		
Women	179	65
Men	88	33
Time at LHD		
< 5yrs	82	30
5 – 10 yrs	65	24
> 10 yrs	123	45
LHD population served		
< 25,000	50	19
25,000-49,999	59	22
50,000-99,999	69	26
100,000-249,999	56	21
250,000-499,999	17	6
500,000 and >	19	7
Predominant areas served		
Rural/ Frontier	68	25
Suburban	58	22
Urban	144	53
Belief: Barriers		
Yes	119	44
No	154	56

Table 2: Frequencies of reported satisfaction with CBOs/FBOs engagement activities using ADEPT domains – descriptive data indexed across sub-questions (N=273).

	Communication Outreach (4 questions)	*Resource Mobilization* ***(5 questions)***	*Organizational Capacity Building* ***(7 questions)***	*Partnership Development* ***(9 questions)***
Excellent	88	233	121	138
Good	458	547	540	638
Fair	334	154	314	409
Poor	58	27	58	93

Table 3: Average satisfaction score per ADEPT domain (N=273).

Type of engagement activities	*N valid responses*	*Average satisfaction score per responder*	*Standard deviation*
Communication Outreach and Coordination	259	2.53	0.625
Resource Mobilization	252	2.88	0.870
Organizational Capacity Building	246	2.51	0.721
Partnership Development and Maintenance	255	2.52	0.631

Table 4: Pairwise comparisons of individual average satisfaction score across ADEPT domain.

	Communication Outreach	Resource Mobilization	Org Capacity Building	Partnership Development
Communication Outreach	-	<.0001	0.3797	0.7096
Resource Mobilization	<.0001	-	<.0001	<.0001
Org Capacity Building	0.3797	<.0001	-	0.7713
Partnership Development	0.7096	<.0001	0.7713	-

between the resource mobilization ADEPT domain and all the other three domains: communication outreach, organizational capacity building, and partnership development and maintenance (Table 4). The mean differences were statistically significant at p-value <0.0001 for all the three pair wise comparisons with the resource mobilization domain. Overall, results show that the average satisfaction reported by the local health department disaster preparedness coordinator was significantly higher for resource mobilization activities compared to all the other three types of community engagement activities for emergency preparedness. None of the other three pairwise mean comparisons between communication outreach, organizational capacity building, or partnership development and maintenance were found statistically significantly different (Table 4). Mean difference in scores between community outreach and organizational capacity building was not statistically significant at p=0.3797, between community outreach and partnership development at p=0.7096, and between organizational capacity building and partnership development at p=0.7713 (Table 4).

Based on the pairwise comparison findings showing that resource mobilization activities for emergency preparedness and response planning resulted in statistically significantly greater average success compared to the other types of community engagement activities, we estimated the predictors of success with resource mobilization to better understand its contributing factors. In this analysis the satisfaction score for resource mobilization was used as the outcome variable. Table 5 shows the factors that predict success with resource mobilization activities for emergency preparedness and response planning: the amount of time preparedness coordinators worked in a local health department, their gender, belief that preparedness activities are beneficial to their health department's preparedness planning, and the type of area the health department serves. Disaster preparedness coordinators who reported more satisfaction with resource mobilization tend to have worked in a public health department for 5 – 10 years, worked in an urban rather than rural area, and are more likely women. Interestingly, coordinators who believed preparedness activities are highly beneficial for community disaster resilience reported significantly lower satisfaction with resource sharing compared to those who held lower belief it its benefit.

Table 5: Predictors of LHDs' satisfaction with resource mobilization activities (N=273).

	Satisfaction score	Estimate Std. Err.	t	P>|t|
Time at LHD				
< 5 yrs	0.15	0.1	1.57	0.1188
5 – 10 yrs	0.25	0.11	2.37	0.0187
> 10 yrs				
MSA				
Rural or Frontier	-0.3	0.11	-2.77	0.006
Suburban	-0.48	0.12	-3.9	0.0001
Urban				
Belief: Beneficial	-0.13	0.04	-3.1	0.0022
Barriers CBO/FBO	0.15	0.08	1.85	0.0654
Women vs. Men	0.19	0.09	2.11	0.0357
Constant	2.8	0.11	24.91	<.0001

Discussion

Our findings revealed that on average, most community collaborative activities for disaster preparedness are not evaluated particularly highly, at least from the local public health department perspective. Thus, this study has demonstrated a need for improvement in collaborative efforts between local public health departments and community- and faith-based organizations (CBOs / FBOs), which are critical in meeting community biosafety objectives as well as for community disaster resilience. Community resilience against biological emergencies can be improved through fostering collaborative partnerships between LHDs and NGOs, which can lead to strengthened LHD capacities of detection, diagnosis, and communication for biological emergencies.

The findings documented that emergency preparedness coordinators' satisfaction with communication outreach, organizational capacity building, and partnership development for emergency preparedness lies midway between 'Fair' and 'Good.' Overall, these three types of community engagement activities were evaluated very similarly. In contrast, success with resource mobilization activities, such as sharing a facility for a community disaster preparedness training, was evaluated on average near to 'Good,' with approximately 85% respondents reporting 'Excellent' success with at least one of the resource mobilization activities (233/273 in the resource mobilization column from Table 2). Due to lack of prior research on resource mobilization activities for emergency preparedness we are unable to assess whether this finding is an indication of a stable pattern or a new trend. However, these findings provide valuable information about the success of collaborative activities between local health departments and community organizations from the perspective of the local public health department. Resource mobilization activities have the potential of increasing success of future collaborative efforts between LHDs and NGOs.

This new knowledge can be incorporated into existing institution-specific biosafety emergency management plans. Such plans are normally guided by local and state health departments, but they vary on the practical biological emergency planning components, such as

initial notification and information sharing channels, communication with local community organizations, local emergency networks, activation of local facilities, management of response staff and volunteers, and transfer of patients. For instance, this finding could help address issues related to mistrust in government, such as those during the 2009 H1N1 vaccination efforts in Los Angeles County, where African Americans had the lowest vaccination rates as a result of inadequate collaboration between the local public health department and the affected communities [3]. Community resource mobilization activities between LHDs and CBOs/FBOs that are evaluated satisfactorily bring the potential of improved community partnerships for emergency preparedness. Similarly, sharing facilities and/or volunteers in mass prophylaxis situations could lead to improved emergency outcomes, such as effective population screening and efficient distribution and administration of vaccines. Focus on collaborative partnerships between governments and non-government organizations could also lead to less dramatic and/or more controlled public response in public health emergencies, such as that during the large Ebola outbreak in Uganda in 2000-2001, [5] and current Ebola outbreak in Sierra Leone since May 2014, Guinea and Liberia, which are the largest and most complex Ebola outbreaks in history [23].

As the Centers for Disease Control and Prevention and its partners strengthen their capabilities to increase the efficiency in detection and response to human-induced outbreaks, satisfaction with community engagement activities is vital in achieving the goal of biosafety domestically as well as at the global level. Governments need to accept this new trend of fostering and maintaining good working relations with non-government organizations and faith-based organizations. The main focus of global biosafety research agenda is the basic science of biosafety issues. This paper addressed a gap in this research by bringing attention to the importance of developing LHD emergency preparedness competencies through partnering with community- and faith-based organizations.

Strengths and limitations

An important strength of this study is that the findings are based on a national sample of local health departments. The probability-proportional-to-size sampling design that was used to generate the stratified random sample of local health departments allows for conclusions that could be applied at the national level. Further, we categorized community engagement activities based on the validated ADEPT instrument that allowed for contrasts and comparisons between types of activities that were conceptually defined based on extensive formative research.

A limitation of this study is that the unit of analysis was the emergency preparedness coordinator, who is the most suitable person to evaluate the local health department's community engagement activities, but their opinions may vary based on personal relationships with the community- and faith-based organizations, prior experience with their leaders, information sharing patterns, and other personal interests. Further, the concept of satisfaction, including perceived benefits and perceived barriers, is based on personal perception, which could be interpreted as a subjective piece of datum. Nevertheless, it gives us valuable information about the current state of community engagement for emergency preparedness.

Conclusion

Considering increased focus on cross-agency collaboration, community- and faith-based organizations are crucial liaisons between the local government and the population they serve for emergency preparedness, response, and recovery. This study showed that from the perspective of the local health department, engagement with community- and faith-based organizations for disaster resilience leads to satisfaction level evaluated as fair to good. Further, this research demonstrated that satisfaction with community collaborative activities for disaster preparedness varies according to the type of activities. The recently developed ADEPT scale was instrumental in assessing differences in satisfaction with community engagement.

Public health implications

In planning for biological emergencies as well as to achieve and maintain community resilience to disasters, it is crucial that collaborative activity between local health departments and community- and faith-based organizations be improved. One way to do so can be focusing on activities related to resource mobilization, such as organizing disaster response training events, sharing facilities for emergency preparedness, response, and recovery, and collaborating in training of staff and volunteers.

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