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Lessons Learned After a Disaster: Investigations of Public Librarians' Health Information Services to the Community and Community Members' Information Needs Following a Catastrophic Flood

Feili Tu-Keefner

School of Library and Information Science, University of South Carolina, Columbia, SC, United States of America.

E-mail address: feilitu@sc.edu

Jingjing Liu

School of Library and Information Science, University of South Carolina, Columbia, SC, United States of America.

E-mail address: jingjing@sc.edu

Darin Freeburg

School of Library and Information Science, University of South Carolina, Columbia, SC, United States of America.

E-mail address: darinf@mailbox.sc.edu

Elizabeth Jane Hartnett

South Carolina Center for Children's Books and Literacy, University of South Carolina, Columbia, SC, United States of America.

E-mail address: lizjh@sc.edu

Denise Lyons

The South Carolina State Library, Columbia, SC, United States of America.

E-mail address: dlyons@statelibrary.sc.gov

Mike Corbo

School of Library and Information Science, University of South Carolina, Columbia, SC, United States of America.

E-mail address: MCORBO@mailbox.sc.edu

April Hobbs

School of Library and Information Science, University of South Carolina, Columbia, SC, United States of America.

E-mail address: ah43@email.sc.edu



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Abstract:

In times of crisis, public libraries, in addition to health, fire, and police departments, are community outreach centers and sources of credible information. In October 2015, several counties in the state of South Carolina in the United States of America experienced catastrophic flooding that caused severe damage. Situation-specific research was conducted to investigate public libraries' value to their communities in providing critical information services, as well as the libraries' legitimacy as partners of public health agencies. The research framework is one recommended by public health experts for risk communication preparedness and implementation during pandemic influenza. In 2015, a case study investigated 1) public librarians' use of multiple channels and technology for information distribution and services; and 2) public libraries' collaboration with multi-level agencies to facilitate emergency response and recovery. In 2017, a survey study examined community members' use of disaster information sources and evaluation of the information's credibility during and after the 2015 flooding. The results show that the public libraries in the areas affected by flooding created disaster-recovery centers, illustrating the libraries' value in facilitating emergency response and recovery. However, the findings also show public librarians were not fully prepared to provide disaster and health information for adult users, especially through online venues. Even though most of the community members in the 2017 survey study indicated that it was easy or very easy to find information, some of them did not use any credible information resources either during or after the disaster. It is recommended that public libraries provide reliable, user-friendly disaster and health digital resources for adult users. Public librarians can use social media network sites, such as Facebook and Twitter, to increase awareness of these library resources and to distribute real-time messages of interest.

Keywords: Disaster Preparedness; Health Information; Natural Disasters; Public Libraries; Community Engagement.

Background

In recent years, there has been a steady increase in extreme weather and hurricanes in the United States. According to data published by the NOAA National Centers for Environmental Information, 35 storms, including 10 hurricanes in the Atlantic, were recorded in the 2017 hurricane season. This is well above the 1981-2010 average of 6.4 (NOAA National Centers for Environmental Information, 2018). During natural disasters and crises, people need to seek information regarding the nature of the threat and how to respond to it (Tanner, Friedman, Koskan, & Barr, 2009). Public libraries, in addition to respected local and national government agencies such as health, fire, and police departments, are community outreach centers and sources of credible information at difficult times, when the public needs multiple information sources (Kreps 2005, Wray & Jupka, 2004).

In addition to being reservoirs for books, public libraries are also what many adults rely on for accessing technology and Internet resources (Kwon and Kim, 2009; Tu, Zimmerman, & Jefferson, 2004). Yet a library has more to offer than its physical resources. For instance,

public health professionals recognize that local public libraries have the potential to intervene effectively in delivering health information services to the general public (Kwon and Kim, 2009). People are more satisfied with the information received about a particular threat if they feel that information provides the facts they need (Zach, 2011). Source credibility is the key to successful risk communication (Blendon, Benson, Desroches, & Weldon, 2010). However, research that can help corroborate public libraries' legitimacy as partners of public health agencies during crises is scarce.

Literature Review

Nature of a Crisis Need

The information needs during times of crisis are notably different from information needs during other times. Heverin and Zach (2012) noted that “the onset of a crisis is a time at which uncertainty about one’s environment can be extreme” (p. 44). As such, information is used not merely to contribute to knowledge about the crisis, but as a sense making tool to connect with others. Westbrook (2009) noted the situational information needs during crisis situations of survivors of intimate partner violence. The abruptness of these crises marks these moments as unique: “That potential for significant change in their lives creates information needs concerning both the immediate basics of daily living and the decisions required for long-term change” (Westbrook, 2009, p. 109).

Libraries Providing Crisis Information

The library takes roles in the provision of information during times of crisis. And the Cynefin model (Snowden, 2002; Snowden & Boone, 2007) sheds light on how the library can approach this role. There are four domains within social systems: simple, complicated, complex, and chaotic. Each has a leadership type that works best. For instance, in the complex domain, answers emerge as leaders probe members of the system to develop the answers. In the simple domain, leaders can provide documentation and best practices for problems that have “clear cause-and-effect relationships that are easily discernable by everyone” (Snowden & Boone, 2007, p. 73).

The nature of a crisis is that it is “the realm of the unknowables” (Snowden & Boone, 2007). There is no time to wait for answers to emerge, and there is no existing handbook outlining the path forward. Individuals searching for information during times of crisis, then—as they look to make sense of their new realities and make basic decisions—must be *given* information. In other words, whereas Lankes’ (2011) *New Librarianships* depicts librarians as facilitators of knowledge creation, during times of crisis libraries must fulfil the role of direct information providers. Their job is “not to discover patterns but to stanch the bleeding” (Snowden & Boone, 2007, p. 74).

Credibility of Information

If librarians are responsible for the dissemination of information during times of crisis, then, as information needs range from sense making to routine issues, how do they determine what is credible information? Yoo (2014) suggested that the quality of knowledge is a perception of a given social system. It includes the intrinsic, contextual, and actionable quality of knowledge. In other words, credible or quality information is not only good in its own right, but it specifically addresses the uniqueness of a given context in a way that achieves some

actionable end. In times of crises, then, the information disseminated by librarians must match what they know about their communities.

Technology Used in Libraries for Information Dissemination

More and more, this information is being distributed virtually, as more and more community members first interact with a library virtually. Library websites, for instance, are becoming increasingly important: “Because of the increasing pervasiveness of Internet technology in everyday life, library websites are now a critical public access point to valuable information resources” (Yoon, Dols, Hulscher & Newberry, 2016, p. 213). Libraries are also turning more and more to social media, using it for the “broadcast-based promotion and marketing of library resources and services” (Young & Rossmann, 2015, p. 20). Social media has become “central to libraries’ outreach and promotion efforts” (Young & Rossmann, 2015, p. 248), and librarians have integrated user-friendly social media sites such as Twitter and Instagram to provide services (Mon, 2015).

This adoption of newer technologies is not always helpful in this dissemination of information, however. Kim & Abbas (2010) found that Web 2.0 technologies adopted by libraries did not match the actual use of these technologies by surveyed users. They noted that “it is easier for libraries to transfer information to users, but not the other way around” (Kim & Abbas, 2010, p. 216). In emergencies, the use of new technologies was under-used by libraries. Zach (2011) found that not many public libraries posted alerts about emergency situations on their websites during the Mississippi River flooding.

Research Design

Weather-related disasters (e.g., hurricanes) occur in the state of South Carolina in the United States almost annually. In October 2015, several counties in the state experienced flooding that caused severe damage. Immediately afterward, a case study investigated 1) public librarians’ use of multiple channels and technology for information distribution and services; and 2) public libraries’ collaboration with multi-level agencies to facilitate emergency response and recovery. In 2017, a survey study examined community members’ use of disaster information sources and evaluation of the information’s credibility during and after the 2015 flooding.

Situation-specific case research was utilized to design both studies. The targeted public libraries are the Richland Library, the Lexington County Public Library system, the Orangeburg County Public Library system, and the South Carolina State Library. The Richland Library is the major local public library system in the Columbia metropolitan area and Richland County. The South Carolina State Library is the primary administrator of federal and state support for the state’s libraries and the formal partner of the research. The investigations involved various aspects regarding information, technology, and user support. The focus of the investigations centered on 1) the role local public libraries played in the provision of critical disaster information services onsite and virtually; 2) public libraries’ partnerships and librarians’ operations; 3) community members’ seeking, use, and evaluation of the information’s credibility, before, during, and after the disaster.

Theoretical Framework

The examinations followed a framework recommended by public health experts for situations of pandemic influenza in vulnerable populations (Vaughan and Tinker, 2009). This framework is based on effective health risk communication preparedness and implementation. It provides guidelines for situation-specific communications and supports the goals of the research. The investigation focused on three dimensions: 1) process (including the use of multiple channels and technology for information distribution and services); 2) people (how libraries used community-first approaches for the provision of services and dissemination of trusted and credible information resources); and 3) partners (how libraries collaborated with multi-level agencies to facilitate the building of community capacity and resources for emergency response and recovery).

Methodology and Data Collection

Both qualitative and quantitative methodology was used, including focus-group meetings with public library administrators and librarians, an in-depth interview with a FEMA (Federal Emergency Management Agency) agent, and a survey.

Understanding of Public Libraries' and Librarians' Operations

Focus group meetings with public library administrators and librarians were used to examine how libraries and librarians responded during this time. Purposive sampling was used to recruit library administrators and librarians as subjects from several locations specifically affected by flooding. The subjects were limited to professional librarians who had earned a Master of Library and Information Sciences (MLIS) degree or equivalent. A pool of potential subjects was identified based on their involvement in the library operations during and after the disaster, after which they were formally invited to participate in this study. An exception was that one of the participants without an MLIS degree was invited because of his involvement in facility and information system management.

Examination of Public Libraries' Partnerships with Other Agencies

The U.S. Federal Emergency Management Agency (FEMA) dispatched agents to help with response and recovery in South Carolina before, during, and after the flood. Once an area was declared a disaster, citizens could file claim forms with FEMA. Many FEMA agents were stationed at the local public libraries to work with community members. During the catastrophic flooding in South Carolina in October, 2015, public librarians in several counties in the affected areas worked extensively with volunteers, responders, and FEMA agents to provide situation-specific and community-first information services.

Investigation of Community Members' Information Access

A survey study, with both qualitative and quantitative research used for data analysis, investigated disaster information needs and access by the community members. The research questionnaire containing thirty-one questions asked participants to report the following information: 1) the community members' perceptions about their local libraries' value and their experiences in using their local libraries during the disasters; 2) the use of venues for sharing information (for instance, social media such as Facebook, etc.) by the community members; 3) the community members' demographic information.

Results

The findings of this research documented how well public libraries provided situation-specific and community-first services that met the recommended health risk communication strategies described in the framework used for research design. However, the results also revealed concerns that deserve the attention of libraries and librarians, so improvements may be made.

Focus Group Meetings Held in 2015

Altogether, twenty-five library administrators (13/25, 52%) and librarians (12/25, 48%) were invited to participate in this study. Three focus group meetings with public library administrators and librarians were held. Eighteen out of twenty-five (18/25, 72%) attended the meetings. Eight of them were library administrators (8/18, 44.4%), and the rest librarians (10/18, 55.6%). Seven library administrators and librarians were unable to participate in the study. Three meetings were held at the University of South Carolina and at the Richland Library's Main Library, with each meeting lasting around 60 minutes.

An In-Depth Interview with A FEMA Agent in 2016

The research team worked with the research partner and participants to identify and invite for interviews the FEMA agents who were stationed in the public libraries in the affected areas after the flooding. One FEMA representative, who served as the site manager in South Carolina, was granted permission to meet with the researchers for 90 minutes. An in-depth interview was held to seek his views on collaborations with the public libraries as well as on how vital information was shared with the community during this time.

A Survey of Community Members in the Flooding-Affected Areas in 2017

The survey population is defined as adult community members who are 18 years or older and are library users. Questionnaires in printed format were distributed in the local public libraries. Information regarding the survey and the link to access the electronic survey form were posted to the libraries' homepages and social media sites. Altogether, sixty-one questionnaires qualified as valid data for analysis. Among the participants of these 61 valid responses, over 80% of them indicated that they are library-card holders. 42 of them (70%) are female; 9 participants (15%) are male. Ten of the participants did not answer the question regarding gender. 37 of them (61%) are age 35 or older. Since the target population for survey participation was limited to adult public library users, it was expected that the number of responses received would be small.

Public Libraries' Collaborations with Multiple Organizations and Their Legitimacy as Partners of Public Health Agencies

Public libraries' successful collaborations with private and public sectors, including public health agencies, show the magnitude of their involvement in facilitating emergency response and recovery during this disaster. After the flooding, the Richland Library administrators and librarians worked with the offices of South Carolina State Senator Joel Lourie and U.S. Congressman James E. Clyburn to help get FEMA to the local communities, and created disaster recovery centers for FEMA. This study clearly documented the success of the Richland Library's main library and branches in this endeavor. These centers enabled community members to use the public libraries to work with FEMA agents in filing damage

claims online. In fact, 14% of all FEMA applications were filed at the Richland Library's main and branch libraries. The library administrators, librarians, and the FEMA agent interviewed reported that the FEMA agents stationed at the public library disaster recovery centers were pleased with the facilities and support provided and felt satisfaction in working with librarians to help community members. The FEMA agent interviewed expressed gratitude for the libraries' hospitality. He also said that public libraries are the perfect environment for serving as a post-disaster resource, since when community members came to the libraries for library services, they found that FEMA agents were conveniently available to help them seek federal aid. The results show public libraries' value to their communities and their legitimacy as partners of public health agencies during and after the 2015 South Carolina flooding.

The local public libraries in the disaster areas also supported other public health agencies' operations, e.g., the South Carolina Department of Health and Environmental Control (DHEC), by providing space in the libraries to facilitate public health professionals' fieldwork. After the flooding, the DHEC set up outside the libraries to provide water-testing kits and give tetanus shots. One of the focus-group participants mentioned that she served as a volunteer when the DHEC went to a library to give tetanus shots, so she was able to talk to people and help with their information needs. The successful collaborations with multiple and public health agencies show the value of public libraries and their legitimacy as partners of public health agencies in facilitating emergency response and recovery during crises.

Public Librarians' Provision of Critical Information Services and Use of Multiple Channels and Technology for Information Distribution

The librarian subjects in this study emphasized the practice of verifying information before sharing it because so much of what was being disseminated was contradictory. They made the best use of the knowledge and skills they had learned in their library and information science (LIS) education programs for the provision of community-first information services. Library administrator and librarian participants stressed the importance of sharing situation-specific, credible information with their community members. An example was responding to requests about water testing because many residents worried that flooding had contaminated water sources. In summary, public libraries and librarians, in tandem with established partners, successfully provide trustworthy, credible, community-first information to users at a time when they are particularly vulnerable.

The librarian participants in this study stated that technology access, predominantly to the Internet, was crucial to obtaining credible information and disseminating resources and services. Social media sites such as Facebook, Twitter, and Instagram were used to disseminate information resources and to provide real-time services. For instance, the Richland Library's Facebook posts reached a total of 109,882 people and had 6,200 impressions per day. On the Richland Library's Facebook site, the library's posts were shared 1,386 times, an average of 98 shares for each post.

Although the public libraries and librarians rose to the occasion, this research shows that they had not been well prepared in advance to identify, gather, distribute, and promote the use of disaster and health information. While the public librarians responded to the community members' information needs during and after the flooding disaster, they had not been proactive in disseminating and promoting access to critical disaster information. For instance, reliable health information in English and other languages had not been shared by the public

libraries. Many credible health information resources such as Medlineplus.gov and Ready.gov are widely known by health sciences librarians. Most of the public library administrators and librarians did not indicate that they had shared any specific health-related resources to community members online or onsite.

Community Members’ Uses of Credible Information Source, Technology and Social Media

Of the community members surveyed, the majority of the participants either visited the local libraries in person or accessed the local libraries’ website frequently:

	Visited a Public Library in Person	Used the Local Public Library’s Website
Yes	53 (87%)	56 (92%)
No	5 (8%)	5 (8%)
No Answer	3 (5%)	

Table 1: Use of public libraries by community members

However, when asked about their preferences in finding information about a disaster (e.g., flooding or hurricane) and related public safety, more community members favored using the library’s website for information seeking:

Visit a Public Library in Person	7 (12%)
Use the Website of a Local Public Library (from Anywhere with the Internet Connection)	30 (49%)
Don’t Know	15 (25%)
No Answer	9 (14%)

Table 2: Community members’ preferences in finding information about a disaster

31 participants (51%) indicated that having a public library improves the quality of life in a community during difficult times. 45 participants (74%) said that there would be a major impact if the local libraries were closed, with 64% (N=39) saying that people need public libraries to help find credible information. 38% (N=23) felt it’s very important and 16% (N=10) felt it’s important in seeking help from librarians in filing FEMA claims online.

Of the community members surveyed, the majority felt that it was very easy or easy to find information about the disaster. However, only a little over 36% (N=16) felt that it was very easy to access disaster health information. The Internet was widely used during and after the disasters. Many people came to public libraries to access technology, including the Internet; 48% (N=42) of the survey participants mentioned using Facebook for communication during the disaster. Twitter was cited by 30% (N=18) of them as the second-most commonly used social media site.

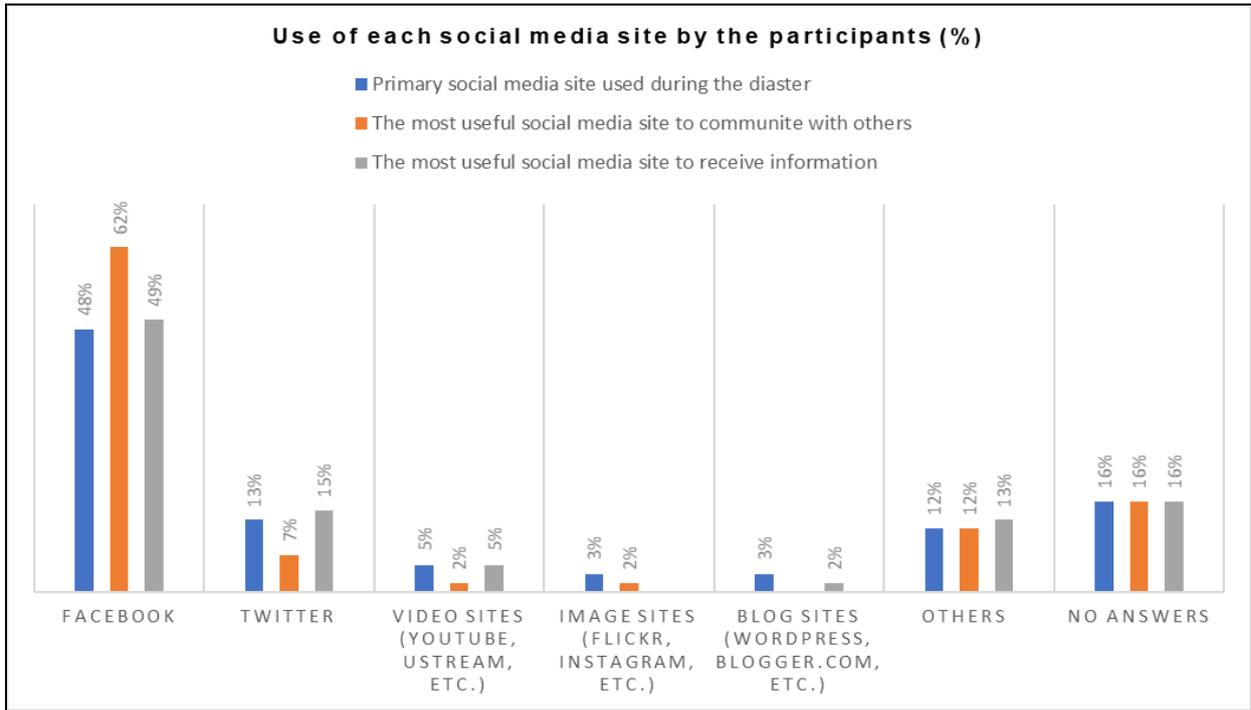


Figure 1: Use of each social media site by survey participants (%).

The South Carolina Department of Health and Environmental Control website was the most frequently used resource in finding information during and after the disaster. Both CDC.gov and Ready.gov were also mentioned as sources of information. Most of the survey participants did not mention the use of MedlinePlus.gov, the most essential consumer health information source recommended by health sciences librarians. Most concerning was that many of the survey participants said that they did not use any resource to find disaster health information.

Sources of Information	Flooding Disaster in 2015 Number of Occurrences
MedlinePlus.gov	6
Ready.gov	8
CDC.gov	18
South Carolina Department of Health and Environmental Control (SC DHEC) website	24
Nothing at all	9
Others (Please specify):	18 A Variety of Internet Websites: 15 Social Media: 2 TV: 1 Radio: 1 No Answer: 9

Table 3: Sources of information used in finding information about a disaster by community members

Conclusion and Recommendations

Our research shows that the public libraries and librarians were not well prepared in identifying, gathering, distributing, and promoting the use of disaster and health information. The findings show a discrepancy between the reliable resources vital to consumers and the health information accessed by the community members. For example, many credible resources widely known and used by health information professionals were not mentioned by the participants in either study. Although the public librarians in the 2015 study did not feel it necessary for LIS education programs to cover disaster preparedness, response, and recovery in the curricula, continuing education is essential to better prepare librarians to provide disaster and health information services.

Even though most of the survey participants indicated that it was easy or very easy to find information, some of them did not use any credible information resources either during or after the disaster. In the longer term, community members in the disaster areas will need information about disaster recovery (e.g., applications for FEMA aid) and environmental issues related to water safety and home repair. Therefore, the selection of appropriate resources in multiple languages for inclusion in library digital collections is crucial. It is recommended that public libraries provide reliable, user-friendly disaster and health digital resources for adult users, making the resources available permanently, and updating the information consistently.

Public librarians can use social media network sites, such as Facebook and Twitter, to increase awareness of these library resources and to distribute real-time messages of interest. Promoting the use of such resources and services can help community members to overcome information and technology literacy problems by accessing the public libraries' websites anytime, anywhere.

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