

Critical Communications: A Retrospective Look at the Use of Social Media among American Sierra Leoneans during the Ebola Outbreak

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This study explores perceptions of the role of social media in facilitating communication and information sharing between Sierra Leoneans in Sierra Leone and the United States during the Ebola outbreak. Using the model of identity-congruent communication as the conceptual framework, a series of focus groups revealed four major themes: social media source of information, topics of communicated information, implementation of communication strategies, and consequences of inaccurate or incomplete information. The use of WhatsApp was reported as

the main source of communication with family and friends in Sierra Leone during the outbreak. Participants felt they received up-to-date information on deaths, outbreak updates, and conspiracy theory updates from the Ebola outbreak. Discussions on inaccurate and misleading information on Ebola prevention was common and fueled fear and created distrust in interpersonal relationships.

Keywords: American Sierra Leoneans, Ebola, Sierra Leone, Social Media, Qualitative Research

The 2013 Ebola virus disease (EVD) outbreak in West Africa was declared to have ended in Sierra Leone on November 7, 2015, accounting for an estimated 14,122 reported confirmed, probable, and suspected cases of EVD in Sierra Leone (WHO, 2016). This is the first major West African outbreak of the virulent Zaire strain and the largest EVD outbreak to date (Dixon & Schafer, 2014). The spread of the virus occurred rapidly because of several factors including cultural practices (e.g., funeral and burial practices for decedents) (Hewlett & Amola, 2003; Pandey et al., 2014), which spurred worldwide visibility. A critical challenge in managing the outbreak

was the lack of effective containment and surveillance systems. In resource-limited settings, the lack of physical and technological resources acts as a barrier to optimal public health outbreak surveillance (Odlum & Yoon, 2015).

To strengthen compliance with measures of prevention and control and improve disease surveillance systems, the use of emerging technologies has been recommended as a priority action (Ansumana, Bonwitt, Stenger, & Jacobsen, 2014; Odlum & Yoon, 2015). The increasing use of social media and instant messaging services has grown significantly and globally (boyd & Ellison, 2008). This allows for information to quickly reach local and remote communities. Studies have shown that social media change the way people communicate daily as well as during disasters that threaten public health (Merchant, Elmer, & Lurie, 2011). In particular, WhatsApp Messenger has more than one billion monthly active users worldwide and ranks as one of the most popular social platforms globally (Statistica, 2016).

LITERATURE REVIEW

Recent studies have shown that the use of social media and applications (apps) has increased the rapid dissemination of health information to individuals and healthcare professionals (Bozalek, Ng'ambi, Wood, Herrington, & Hardman, 2015; Oyeyemi, Gabarron, & Wynn, 2014; Willemse, 2015). Social media apps have been shown to have significant effects on improving primary health care education through the training of nurses (Willemse, 2015). Specifically, they have provided a virtual space for collaborative practice, exchange of course-related information, and academic support to enhance teaching and learning (Willemse, 2015). Studies have also shown that apps have multiple benefits in health promotion including wide coverage, low cost, the ability to support stigmatized groups without exposure, exchange of information, and implementation of visuals (Griffith, Lindenmeyer, Powell, Lowe, & Thorogood, 2006; Househ, Borycki, & Kushniruk, 2014; Ritterband, Thorndike, Cox, Kovatchev, & Gonder-Frederick, 2009).

Studies have further explored social media's impact of disseminated health information during public health outbreaks. Analyzing social media text can provide first responders with useful insights about public fears and trending topics (Huang, Chan, & Hyder, 2010; Lachlan, Spence, & Lin, 2014). Additionally, the use of social networking sites such as Twitter has been of value in the identification and tracking of disease

outbreaks (Dyar, Castro-Sanchez, & Holmes, 2014; Mishori, Singh, Levy, & Newport, 2014). For example, one study focused on the typhoon Morakot disaster in Taiwan to assess the use of Internet social networking in disaster emergency response and public health management of disasters (Huang et al., 2010). A tropical cyclone wrought catastrophic damage in Taiwan, affecting a large portion of Southern Taiwan and leaving over 600 people dead, 76 missing, and 24,950 displaced. The authors found that Internet social networking and mobile technology were helpful for community residents, professional emergency rescuers, and government agencies in gathering and disseminating real-time information regarding volunteer recruitment and allocation of relief supplies (Huang et al., 2010). This study proposed that the Internet and social media could replicate these benefits in future disaster management.

Conversely, other studies have demonstrated that health information disseminated via social media has the most exposure when it is unconstructive and/or misleading (Nagpal, Karimianpour, Mukhija, & Mohan, 2015). One study found that videos that were classified as “useful” by experts had a significantly lower number of public views as compared to those deemed “misleading” (168,629 vs. 495,255 respectively, $p=0.005$) (Nagpal et al., 2015). While this does not imply that people necessarily believed “misleading” videos, it brings into question the underlying motivation and subsequent potential benefit of dispersing and viewing information on social media. In addition, Basch, Basch, Ruggles, & Hammond (2015) found that online video sharing sites such as YouTube serve as the main channel for spreading misinformation and conspiracy theories.

During the Ebola outbreak, social media platforms had limited guarantee on the accuracy of dispersed information during the EVD outbreak as well. At the onset of the outbreak, effective local communication was limited, which led to the dissemination of misinformation. A study by Oyeyemi (2014) revealed medical misinformation in Twitter messages on “Ebola” and “prevention” or “cured” from Guinea, Liberia, and Nigeria during September 1 to 7, 2014. Approximately, 36% and 55.5% of *tweets* (i.e. Twitter messages) had medically correct information and medically incorrect information respectively ($p<0.001$) on treatment of Ebola (e.g., the use of salt and plants leaves to cure Ebola), which were left undisputed (Oyeyemi et al., 2014).

While some studies have focused on the use of Twitter and the Ebola outbreak, there is minimal published insight into other social media applications and the outbreak. Thus, we sought to explore the use of other social media as a means of communication between members of the Sierra Leonean communities in Sierra Leone and Greater New Brunswick area during the Ebola outbreak. The conceptual frame for this study is the Model of Identity-Congruent Communication.

Model Identity -Congruent Communication

The Model of Identity-Congruent Communication posits that identities motivate health behavior, and provides a framework for conceiving personal health promotion and what we do to promote personal health, such as health information seeking, response to health messages, health decision-making and experience with health systems (Warren, Hecht, Jung, Kvasny, & Henderson, 2010). In particular, relational and communal/ethnic identities have been shown to impact the use of e-health information by influencing perceptions of the salience of health information, the motivation to use e-health products (e.g. mobile application, social media), and psychosocial factors such as health concerns for oneself, family, and friends as well as the community in general (Warren & Sukumar, 2013).

Relational identity is the location where individuals shape their communication to their interactional partners (Hecht, Warren, Jung, & Krieger, 2005). Relationships play a significant role in health (Uchino, 2006). Relationship, as a type of social influence, is a location for exchanging health information. Health meanings are shaped and reinforced through narratives and normative assumptions exchanged in interaction with other social actors including family, friends, work associates, and neighbors. Relationships can also reinforce negative or positive health behavior.

Communal/ethnic identities is the location where individuals express qualities of a collective identity held by a group or community (Hecht, Warren, Jung, & Krieger, 2005). This can also include a strong local or global identity and a sense of solidarity with other community members (Campbell & Jovchelovitch, 2000). The communal domain is also communicated through group products, such as social media and in community action like health practices.

Among Sierra Leoneans, fostering a sense of community identity is an important cultural value as the high value placed on relational identities and interdependence (Hecht, Jackson, & Ribeau, 2003; Kumpfer, Alvarado, Smith & Bellamy, 2002). These values are promulgated through the use of social media among Sierra Leoneans. Moreover, the use of social media within the context of the Ebola outbreak, provides insight on the motivation to use social media, the importance of health information sharing, and the concerns felt by Sierra Leoneans during this health crisis. Therefore, the MICC provides a valuable tool to understand the use social media by Sierra Leoneans during the Ebola outbreak. Specifically, we attempted to answer the following research questions:

R1: What are the perceptions of the role of social media in facilitating information sharing between Sierra Leoneans in Sierra Leone and the United States during the Ebola outbreak?

R2: What are the perceptions of the role of social media in facilitating communication between Sierra Leoneans in Sierra Leone and the United States during the Ebola outbreak?

METHODS

The study received approval from the Institutional Review Board of Rutgers, The State University of New Jersey.

Participants and Setting

Approximately, 8,802 Sierra Leoneans were estimated to be living in New Jersey in 2012 (Kolesnikov, 2014). The study location was targeted due to the high number of Sierra Leoneans residing in greater New Brunswick area. Eligibility required participants be aged 21 years and above, identify as Sierra Leonean, and reside in the greater New Brunswick area, New Jersey.

Participants were recruited via fliers and through leaders of one of the major Sierra Leonean community organizations in New Brunswick. Potential participants were invited to the venue of the study. We aimed to recruit eight to twelve participants per group; however, we had approximately four to seven participants per focus group discussion,

which included a total of 30 participants. The small number of focus group discussions (FGD) was acceptable because we had reached theoretical saturation after five sessions.

Data Collection

Focus groups were conducted from March to June 2015. Each FGD lasted between 45 minutes to 1 hour 30 minutes and took place at a community venue widely used by the local Sierra Leonean community for meetings and other social gatherings. The sessions were conducted in English language and audio recorded. Participants were paid an honorarium of a \$25 gift card for participating in the focus group. JW (Principal Investigator) facilitated the focus group sessions and AOW, a graduate research assistant, served as a note taker and conducted data checks of questionnaires. All sessions were audio-recorded and transcribed verbatim by AOW.

We developed a structured focus group discussion guide to streamline our discussion on three main topics: knowledge on Ebola, impacts of the Ebola outbreak, and perceptions of media and health care communication in response to the Ebola outbreak. Each respondent was administered a questionnaire which collected socio-demographic characteristics.

Data Analysis

Five members of the research team reviewed transcribed notes to ensure accuracy, and recurring themes were identified ahead of analysis. Transcribed notes were uploaded and coded using QSR NVIVO version 10, a qualitative analysis software (Nvivo, 2016). Three study team members analyzed data and generated codes and themes. Themes including overarching sets, nodes, and sub-nodes were independently identified by study team members. Several meetings of the research team were arranged so that themes were cross-compared, and consensus of themes required the overlap of independent coding of an overlying set. All individual nodes and sub-nodes were then cross-compared and discussed to reach collaborative consensus on the included data within themes.

RESULTS

In total, 30 American Sierra Leoneans participated in the focus group discussion.

Table 1 summarizes the sample characteristics: the mean age was 46.7 years (SD± 12.5), 63.3% males; 56.7% married; 76.6% employed, and 56.7% had four years of college education and more.

Four general themes emerged in the FGD: sources of information, topics of communicated information, implemented communication strategies, and consequences of inaccurate or incomplete information.

Table 1
Participant Demographics

Characteristics	n	(%)
Sex		
Male	19	63.3
Female	11	36.7
Age (years)		
25-34	6	20
35-44	5	16.7
45-54	10	33.3
55-69	9	30
Religion		
Christian	13	43.3
Muslim	16	53.3
Others	1	3.3
Marital Status		
Married	17	56.7
Separated/Divorced	7	23.4
Never married	6	20
Education		
High school	5	16.7
Associate's degree	8	26.7
4 years of college & more	17	56.7
Annual income		
Less than \$24,999	7	23.3
\$25,000 to \$49,999	10	33.3
\$50,000 to \$99,999	9	30
\$100,000 or more	4	13.3
Employment status		
Employed	23	76.6
Unemployed	7	23.4

Sources of Information

Social media. Across the five focus groups, the dominant source of information during the outbreak was through social media apps. Primarily, WhatsApp was used to exchange written messages, videos, and pictures as a means to share information on the status of the outbreak and updates between family and friends in the U.S. and Sierra Leone. They also used these platforms as a source of education and empowerment.

Participants specifically noted:

Because we have social media, so we have video, we have WhatsApp; we have Facebook, Twitter, and Viber. There was stuff (information from the Internet) that we knew, that they (health practitioners, media, government, etc.) didn't even know.

They have the Facebook, Twitter, and YouTube – so if we're spewing videos based on information that we're getting from here, we're giving it to them. And because they're watching it there, you know, empowering themselves by education themselves.

Topics of Communicated Information

Death update. Many participants mentioned receiving up-to-date information on deaths from the Ebola outbreak. For instance, a participant noted:

I mean I felt really bad and for those nurses that lost that life . . . I saw a lot of them; a lot of my group mates, some of them that we are trained together. I saw their faces on Facebook. I was so depressed.

Outbreak updates. Many participants cited social media as their insight into the limitations of Sierra Leone's healthcare system. For example, a majority of participants mentioned that they saw videos of people wearing non-protective gear during the outbreak, which was an obstacle that contributed to increasing the transmission of the virus. One participant recalled:

I remember in the early stages, I saw videos of people wearing garbage bags instead of the whole-body suits. They had to make do with whatever they had in order to bury and take care of these contaminated corpses all over the place. So that was one of the obstacles in the beginning and those who were not educated or trained, died in the process.

Conspiracy theory updates. Participants discussed hearing conspiracies about the source of the outbreak via social media platforms. Most of these theories hypothesized the

origin of the virus from a laboratory in Kenema, Sierra Leone. Many participants voiced belief of this conspiracy. A few participants offered:

As to how the virus got into Sierra Leone, I started getting WhatsApp messages. That was social media. Where there were anonymous voices who were not saying who they were but were talking about these labs in Sierra Leone.

So there is a lot of audio we have from WhatsApp that says they were trying to aerosolize the virus.

It's [information on the use of Ebola as a biological weapon] all over the Internet, including WhatsApp.

Implemented Communication Strategies

Classifications of strategies. There were several strategies implemented through the use of social media to prevent the spread of the virus. These focused on education of the signs and symptoms of Ebola and specific strategies included searching for information on the Internet, creating educational materials (i.e. fliers, wristbands, information packets), holding seminars, and creating and uploading videos via multiple social media outlets. The following participants elaborated:

Like we can Google (search online) some stuff that will literally have the steps of, you know, signs and symptoms, you know, those types of things, put it on Facebook or WhatsApp.

We even did videos. Yeah, exactly, they did some promotional videos with me to educate people on WhatsApp about Ebola.

People over here started helping to understand it [the virus], they didn't understand it. The Government doesn't help. So people in our community started making videos on Facebook.

Consequences of Inaccurate or Incomplete Information

Fear. During the Ebola outbreak, participants feared being quarantined which contributed to having limited access to information, thus, resulting to contradictory, incorrect, or incomplete information. According to participants, this created fear about the virus:

There was nobody to inform the government even to explain what's going on... so everyone is saying what they want to say, passing the wrong information. Ostracized by family and friends.

Interpersonal relationships. Due to the outbreak, many participants expressed that poor information caused interpersonal challenges. African families and friends in the United States ostracized the local Sierra Leonean community often because of ancestry rather than physical travel to Sierra Leone. A participant recalled children being barred from their friends:

My friend's daughter, she has never been to Sierra Leone, she was born here. Her best friend is a Nigerian. The parents stopped them from having any interaction, just because. The girl has never been to Sierra Leone and her parents have never been there in the past 10 years.

DISCUSSION

Utilizing the Model of Identity-Congruent Communication (Warren et al., 2010), our study explored social media communication between Sierra Leoneans in Sierra Leone and those residing in the Greater New Brunswick area of New Jersey during the Ebola outbreak in Sierra Leone. While previous studies have explored Sierra Leonean communities and Twitter use (Basch et al., 2015; Oyeyemi et al., 2014), this is the first study to our knowledge that explores communication patterns, including social media, among Sierra Leoneans residing in the United States. In addition, our study population provided a unique insight into the use of social media to share crisis-related information and influence during the Ebola outbreak. The theoretical model extends these insights on the motivation to use social media to share their concerns during the outbreak. It is clear that respondents view social media as important tools to manage relational and communal/ethnic identities (Warren et al., 2010), as well as to create a collective sense of shared experience within and across New Brunswick Sierra Leonean communities and those in Sierra Leone.

The use of social media apps such as WhatsApp, Facebook, Google, Twitter, and YouTube was cited as the source of communication with family and friends in Sierra Leone during the outbreak. The use of the app gives people unrestricted access to share perspectives, visuals, and information over the Internet. Our study shows that social media has the ability to create a rapid diffusion and accessibility to health information, which would benefit resource-limited regions. Thus, the role of social media apps should be further explored in health communication as well as disease outbreaks. A possible

disadvantage to this is that, in using these apps, data may not be stored on a public server automatically and thus may not be easily accessible for further research and content analysis. Furthermore, close supervision will be necessary to ensure accurate and complete information dispersal.

Themes from our study are consistent with other studies that explored the impact of the Ebola outbreak on health systems and population health in Sierra Leone (Elston et al., 2015). Our study also shows a breakdown in trust between the Sierra Leonean communities in New Brunswick and the health system in Sierra Leone. This distrust is likely secondary to social media exposure of adverse health outcomes in Sierra Leone with marked variations in healthcare systems in the urban and rural districts. Findings from the study indicate the need to strengthen and sustain engagement between the communities including the diaspora communities, healthcare system, and the Sierra Leone government. We argue that organized groups and civic leaders abroad should take a lead in promoting useful information and video on social media, where people can easily have access to information through the Internet.

Our study also identified social media exploitation, with themes generated on misinformation and conspiracies on the source of the Ebola outbreak. This misinformation spread by non-organized sectors was consistent with previous studies (Adebimpe, Adeyemi, Faremi, Ojo, & Efuntoye, 2015; Nagpal et al., 2015; Oyeyemi et al., 2014). For instance, Adebimpe et al. (2015) cited that wrong and unfounded information on treatment and prevention of Ebola was shared with peers and friends. The topics and accuracy of information retrieved via social media are important for target populations and the research community (Garett, Smith, & Young, 2016) and influences behavior during outbreak. Social media amplified fear during the Ebola outbreak (Pidgeon, Kasperson, & Slovic, 2003), an archetypal model where an exaggeration or reassurance from the media can inflame or subdue people's perceived risk of Ebola infection (Lazarus & Folkman, 1984). Thus, misinformation can rapidly spread within their networks, creating fear and anxiety that often is not decisively corrected by other users. Social media irrefutably helped to spread rumors and unscientific information about diseases in affected African countries and abroad (Allgaier & Svalastog, 2015; Feuer, 2014; Nyhan,

2014). Thus, careful consideration must be given to analyze and correct information disseminated over social media.

Limitations

Although we reached a saturation point in the focus group, the overall sample size is relatively small. We also enrolled the study population through the use of one community organization, which limits generalizability of our findings to the larger Sierra Leonean population.

CONCLUSION

Notwithstanding these limitations, our findings provide in-depth qualitative insight into how communities distant from an outbreak are affected by that event. This influence provided tremendous motivation to manage relationships and to cultivate a virtual community of shared experience and information through the use of social media. In addition, these findings provide an understanding into the benefits and drawbacks of social media and health. With the rise of the Internet and social media as internationally sought sources of information, it is important for public health agencies to have greater Internet and social media presence, so as to properly monitor and disseminate accurate information to prevent undue fear and paranoia (Pathak, Giri, & Shrestha, 2015). Thus, it is critical that health professionals partner with community members and families impacted by the health crisis to assist in effective dissemination of information through social media.

Information technology has the potential to provide higher capacity and effective communication mechanisms that can reach citizens and government officials simultaneously across diverse geographical regions (Shneiderman & Preece, 2007). We recommend the usability and acceptability of data from social media, and specifically social applications, as components of the public health systems and surveillance programs. However, there is a need for the development and implementation of social media supervision to ensure the accuracy of disseminated information, which cannot occur without involving community leaders, families, and other local stakeholders.

Our study describes the use of social media among Sierra Leoneans communities in Sierra Leone and America and impacts on health and society. Our study shows that social media apps actively played a substantial role in communicating and transmitting information during the Ebola outbreak in Sierra Leone. The use of social media presents an opportunity to strengthen health systems and communication programs as well as communication among individuals, health agencies, governments, and communities to ensure accurate information is disseminated. Thus, these findings call for a need to design interventions, strategies, and health professional/community partnerships to monitor information disseminated during disease outbreaks.

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