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Germs, Guns, and Fear in Disaster Response: A Rapid Qualitative Assessment to Understand Fear-Based Responses in the Population at Large: Lessons From Sierra Leone 2014-2015

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Abstract

We set out to assess the feasibility of community-focused randomized qualitative assessment at the start of an emergency to identify the root causes of fear-based responses driving the pandemic. We used key informant interviews, focus group discussions, reviewing of government and non-government organization documents, combined with direct field observation. Data were recorded and analyzed for key-themes: (1) lack of evidence-based information about Ebola; (2) lack of support to quarantined families; (3) culturally imbedded practices of caring for ill family members; (4) strong feeling that the government would not help them, and the communities needed to help themselves: (5) distrust of nongovernmental organizations and Ebola treatment centers that the communities viewed as opportunistic. On-the-ground real-time engagement with stakeholders provided deep insight into fear-based-responses during the Ebola epidemic, formed a coherent understanding of how they drove the epidemic, presenting an alternative to the standard disaster-response United Nations-strategy, producing community-driven solutions with local ownership.

Fear has an evolutionary purpose for humans. Steimer defines fear as "a motivational state aroused by specific stimuli that give rise to defensive behavior or escape.[1]" Response to fear can trigger life-saving actions; however, it can also trigger life-endangering behavior such as avoidance and the spreading of misinformation. The fear-based responses (FBR) and their contribution to the Ebola crisis in West-Africa 2014-2016 are well documented by Shultz et al.[2] Our current study discusses a rapid qualitative assessment (RQA) model that relied heavily upon community participation to identify the causes of the FBR that were driving the spread of the Ebola virus in Sierra Leone. The efficacy of an in depth RQA is previously proven; however, this model focuses on inclusion of all stakeholders, not isolated groups within the impacted communities.[3] This community-based information provided an informed and data-driven basis for implementing an effective and rapid response.[2] Such models continue to demonstrate their relevance even now with FBRs driving behavior related to the coronavirus disease 2019 (COVID-19) global pandemic.

"Fear-related behaviors (FRBs) are individual or collective behaviors and actions initiated in response to fear reactions that are triggered by a perceived threat or actual exposure to a potentially traumatizing event. Importantly, FRBs modulate the future risk of harm.[2]" When a disaster occurs as the result of 1 event, such as a tsunami or hurricane, then FBR protect human life and serve an evolutionary and biological purpose. Programs that arrive and deploy quickly, providing outside resources and expertise, are welcomed by the communities impacted and are able to deliver life-saving care and interventions in directly impactful ways. Individual choices and fear are still driving decision-making in these types of disasters. However, when the threats are viral and go global, like with Ebola and coronavirus viruses, individual decision-making and fear drive human choices at a regional and a global scale in ways that often promote the spread of disease and destruction. Addressing fear-based responses of health-care workers and the population at large must be an essential strategy in these types of disaster responses because they hamper the ability of implementing partners to achieve any measure of success.[2] The real impact of FBRs is wide ranging, and impacts mental health for essential workers, the ability for governments and agencies to effectively respond and contain threats, and restricts economic growth by prolonging epidemics and pandemics.[2] Very few models exist to rapidly assess the determinants of FBRs and combat them within epidemic or disaster settings, which was imperative in this

response as FBRs were the number 1 drivers of the epidemic as stated by Johnson and Vindrola-Padros.[3]

Methods

Setting

The Ebola epidemic had been running rampant since July 2014 when the first case was diagnosed in the Pujehun District near the Liberia border. By December 2014, a total of 9446 people were confirmed to be infected and 2758 people had died.[4] As the crisis continued, additional global actors mobilized to respond. Among the global actors was Partners in Health (PIH), an International Non-Governmental Organization (INGO) whose mission is "to provide a preferential option for the poor in health care.[4]" PIH partnered with a local Sierra Leonian non-governmental organization (NGO), The Wellbody Alliance, to tap into that organization's experience and knowledge of the local context, as well as being able to leverage their presence in a region that was developing community health volunteers before Ebola. PIH was determined to establish a Community Health Workers (CHW) program, as they believe that "paid, trained and coordinated community health workers are vital to health education, case detection, and linking people to care.[4]" PIH had already been responding to the crisis with medical interventions through a partnership with the Sierra Leonian government to staff and run the government Ebola Treatment Unit (ETU) in Port Loko. This partnership with the government provided an entry into expanding their response to include community-based components. PIH chose to focus on survivor services and the creation of a robust CHW program to support the medical response.

Study Design/Model for RQA

A 3-person, community-centered team was deployed by PIH. It included 1 expatriate with a master's degree in public health and 15 plus y of experience working in development as well as extensive experience working in Sierra Leone with community-based programs. It also included 2 local staff members who were community mobilizers and had been involved in the epidemic response from the beginning. We elected to conduct a participatory RQA of stakeholders in the Ebola response before designing the intervention requested by PIH. This RQA would focus on the 3 Chiefdoms with the highest case numbers and involve extensive community participation. We started with identified community and response leaders and used a snowball network approach to access a range and scope of perspectives. Every group or person we spoke with advised us of others who could also provide in depth information regarding the community views on the response, the gaps, and the drivers of fear. We also gathered observational and qualitative data from the government officials, Ebola Treatment Facilities, and the British Military.

The following 4 open-ended questions framed the assessment: (1) What's currently happening? (2) What are the gaps? (3) What filled those gaps pre-event? (4) Why isn't it working now?

During the phase 1 interviews, the 3 team members took handwritten notes. All the interviews were conducted with all 3 team members present, so the notes could be validated against others' perceptions during the analysis. The information shared by participants was reframed and repeated back to them for clarification and validation of summary findings on the spot. At the end of each day, the team analyzed the interviews through peer debriefing and visual mapping. They identified key themes, which were used to frame the enquiries of the following day. The assessment was conducted over 4 d. It began with identified community leaders and evolved to include Ebola response coordination partners, both government and NGO leadership, community leaders, both elected and socially selected. It also included pre-event community organizations such as men's and women's groups in each village, the Paramount Chiefs for each administrate Chiefdom in the district, religious leaders, education leaders, and government officials. A total of 76% of those interviewed were outside the capitol, 24% lived or worked in the capitol. Seventy percent of those interviewed were community members directly impacted by the epidemic, 26% were INGOs working on the Ebola response, and 4% were Sierra Leonian government employees. The interviews were halted after 4 d, once the team began to hear repetition in the responses and the key themes reached saturation. See also Figure 1.

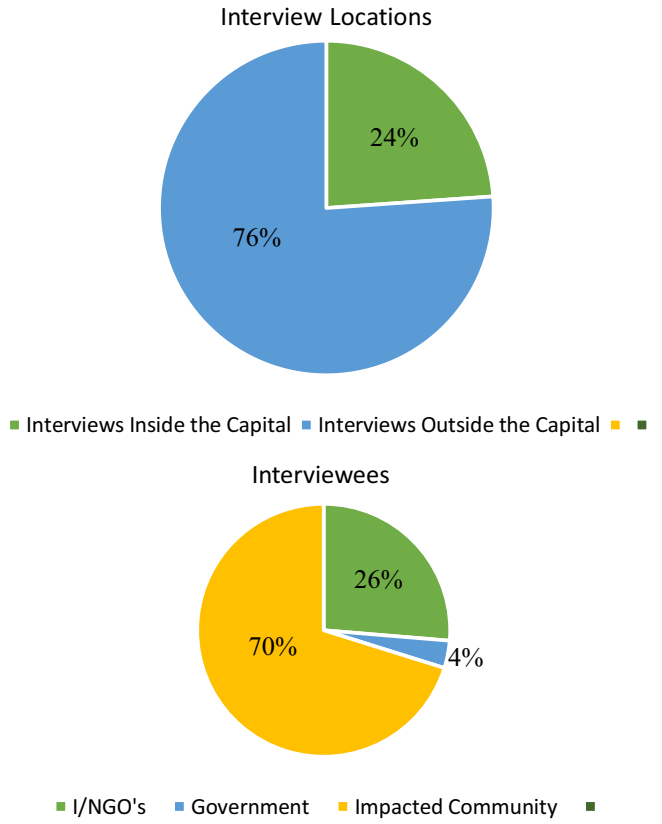

Figure 1. Breakdown by percentage of interviews done in the district capital versus outside the capital. As well as who in the communities were interviewed.

Data Analysis and Verification

The team used an integrated approach to analyzing the data gathered. Every evening at the end of the interviews, the notes were re-read and discussed and classified into thematic categories. We all had knowledge of the fear-based behaviors that saturated media coverage, and our thematic framing focused on rooting out the causes of those FBRs, as highlighted in the article by Cancedda et al.[4] The results of our integrated analysis were then shared with the community groups and leaders previously interviewed, and their feedback and contributions were actively sought for phase 2 and will be described in the Methods section. Overall, this process involved asking for community participation

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at 2 phases in the design process, ensuring that the information gathered was contextually and culturally validated to the Ebola epidemic in process. The use of a snowball method to select participants, the integrated data analysis, and the final validation leant confidence in our findings and the resulting program design that was built.

Results

The RQA focused on all stakeholders, those in the community and those that were part of the response. Recurring themes emerged during the course of the RQA and were tracked against known fear-based responses driving the spread of the virus, as highlighted by Richards et al.[5] Once a saturation of these thematic concepts was reached, the team moved on to phase 2: analysis and verification. This was done by revisiting approximately 25% of the interviewees to confirm our findings. Our findings allowed us to clearly draw a line between the fears in the community and the resulting behavior. We could see that a lack of evidence-based information on the virus as well as the treatment and care provided in the ETUs was preventing the population from seeking assistance. We also learned that this lack of knowledge was exacerbating the continuation of harmful behavior and practices that spread the virus further. For more details on the themes identified and the correlating data collected, please see Figure 2.

Gaps Identified

During the RQA of the existing response, the following gaps were identified in the response system that could be addressed using Community Based Participatory Research (CBPR) in the form of a comprehensive Community Health Worker program. Our findings correlated with a similar assessment done in Liberia by The Ministry of Health the World Health Organization offices in that country.[6]

Maintaining quarantine integrity:

> Families were being quarantined to their home compounds with no access to food, water, communication, or information about their ill family members in the ETUs. This was causing countless people to violate their quarantine, further spreading Ebola and exacerbating the epidemic.

Active case finding need:

> When people were falling ill, family members were keeping them at home to care for them because they did not trust the ETUs or the government. Part of this distrust was caused by a lack of communication from the ETU to the family after patients were admitted. Another factor was a generational distrust of the government, communities were accustomed to taking care of themselves independently and not relying on the government. The involvement of the military, both British and Sierra Leonian, contributed to this distrust as well.

Evidence-based community education about Ebola, what happens in the ETU, and survivors:

> This information coming from a trusted source to the community would increase compliance with necessary epidemic restrictions, limiting the spread of disease and decreasing the mortality if people could be treated earlier as confirmed by Kellerborg et al.[7]

Provide communication link between villages/families and the ETUs:

> Patients were removed from the communities by the government ambulances and then seemed to disappear, with family members never hearing which ETU they were taken to or how they were fairing.

A multifaceted intervention to implement guidelines around best practices in community health work to improve trust in a health system was needed. As the existing health system had collapsed, it was important that the intervention be built within an existing social structure that was culturally appropriate. The assessment phase had concentrated its focus on the communities impacted, building the system in a way that leaned into existing community infrastructure would rely on the relationships already begun. The RQA provided a clear picture of the FBRs contributing to the continuing spread of Ebola. For more information on the FBRs and the resulting program components developed to address them, please see Figure 3.

Conclusions/Discussion

Based on the themes of the interviews, identification of gaps in the existing response structure, and identification of the root causes of the FBRs, the following key components for a community-based program were identified. The information gathered in the RQA would go on to inform the structure of the program, the topics and length of the training necessary, and the methods for integration into the existing response structure in a way that would close gaps and strengthen the overall response. We would use community-based participatory research similar to that of Harris et al., the relationships with the stakeholders developed during the RQA, and establish a comprehensive CHW program.[10] It would consist of a 1 group pretest-posttest design and continual feedback loops allowing for continual adaptation and maximum efficacy due to the ever-evolving nature of the epidemic and response. This program will be highlighted further in a future study expanding on the structure and implementation of the CHW program of Ebola response volunteers.

Historically, our crisis and disaster response models are predicated on older military models of warfare, as highlighted by Dara et al.[11] The focus in these cases is on body retrieval from battlefields and rapid medical assessments and care. Most current medical responses follow a similar model, focusing heavily on rapid clinical assessment, care for the sick or injured, and management of the dead. The UN has a model of coordination that is activated during most disaster responses. It dictates that coordinating committees be constituted, and that they include representatives from the local government as well as I/NGO partners.[12] This has proven effective previously because it provides a consistent pattern to response that can be duplicated quickly worldwide. In our case study, we demonstrate that community participation at the inception of this coordination should exist well beyond tokenism to address underlying fear-based behaviors that are causing the disaster. This idea is supported in other literature but those primarily focus on RQAs with specific stakeholders only. There should be further study and examination of methods that involve all stakeholders at the start of any disaster or epidemic response. Schultz and other researchers also recommend a "a rapid assessment of outbreak-associated psychological stressors, for both civilians and health care

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Theme 1	**A lack of evidence-based information about Ebola in the general population**
Interview comments	• Many declared Ebola was not real and not the cause of the deaths. • There was widespread messaging sharing false causes of Ebola, such as 'foreigners have brought it to Sierra Leone as a way to control us' or 'witches are infecting people who do not believe in God'. • An often-repeated quote was "The ETUs are only places people go to die". • Traditional medicine was seen as a better option for care than the ETUs.
Theme 2	**A lack of support to families in quarantine**
Interview comments	• Families quarantined in their homes had no access to water or electricity and could not work on their family farms or secure food for their families.
	• Most homes in this agrarian-based society consisted of a 1- or 2-room house, built of mud and sticks, and surrounded by a pounded dirt yard where the family activities and living were mainly focused. • The quarantine area included the yards but did not extend to communal water or food sources in order to decrease the risk of infection spreading.
Theme 3	**A desire to continue with historical practices of caring for ill family members in the home or accompanying them to the hospital if the illness was severe enough**
Interview comments	• People were not calling for ambulances to transport sick family members because the ambulances would not share where the patients were going. • Once a patient was admitted to an ETU, no one kept the family up to date on their status. • Families could not visit patients in the ETUs, due to the risk of infection, but the fact families were denied this access only raised their suspicions that the ETUs were not providing care. • There was a historical distrust of hospitals as 'places to die' that had been altered to also include ETUs. • All of these fears led people to hide sick family members in their homes, further infecting the family and spreading the Ebola virus.
Theme 4	**A desire by the Paramount Chiefs and other community leaders to organize communities in some way to combat Ebola, but the only model they were familiar with was a punitive one where threats and social pressure were used to gain compliance**
Interview comments	• The Paramount Chiefs were organizing door-to-door campaigns in their Chiefdoms to provide information about Ebola and the ETUs. • These were often coupled with complete lockdowns, requiring everyone except the teams designated by the Paramount Chiefs to remain in their homes or yards all day. • Often during these campaigns, intimidation and threats were used to get people to comply with restrictions and observe the requirements for calling an ambulance and reporting neighbors who appeared to be sick. • Paramount Chiefs were asking the government to provide more information and tools to them so they could sensitize their communities and mobilize them more effectively, but the government had not provided such assistance yet.
Theme 5	**A strong feeling that the government would not help them, and the communities needed to somehow organize to help themselves**
Interview comments	• The Paramount Chiefs reported getting no replies to their requests for information (related to above). • There is evidence that the government did delay their response to the Ebola outbreak and that this delay cost lives.[5] • There is historical precedence for the districts and Chiefdoms relying on their own resources and ingenuity to solve problems in their communities.
Theme 6	**A distrust of the ETUs, which were seen only as a place people go to die**
Interview comments	• This mirrored the historical distrust of hospitals, and the general view that you just went there to die. • This was a primary reason that families wanted to be able to accompany their sick relatives, to ensure that nothing nefarious was done to them in the hospitals or treatment centers.
Theme 7	**A distrust of 'outsiders' (NGO workers) who were viewed as coming to make money off of the epidemic and not to help the people**
Interview comments	• This dated back to the extreme violence that plagued the country from 1991-2002 during the Guerilla War.[5] • This fear was being exacerbated by I/NGOs unfamiliar with communities driving in with big SUVs and chastising the residents for their behavior, before driving away again abruptly.

Figure 2. Themes.

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FBR 1	**Escaping from quarantined homes or leaving areas with high concentration of the virus**
	Families in quarantine were fleeing their homes, further spreading Ebola. During the recent violent civil war, much of the violence was perpetrated by soldiers and 'governments,' and this fear of the government was still very much a factor in people's memories. Families were also being quarantined to their home compounds with no access to food, water, communication, or information about their ill family members in the ETUs.
Program component to counter this FBR: *Maintaining quarantine i* employed *ntegrity:*	
Support was needed to ensure that quarantined families had access to fresh water and food. They also needed to be connected to their community in some way, instead of isolated and stigmatized. It was imperative that a communication system between the ETUs and the quarantined families be developed so they would know the health status of their family members in the ETU.	
FBR 2	**Not calling for the ambulance if a family member began to display symptoms of Ebola**
	The government was demanding that people call for an ambulance if a family member developed symptoms. Then the ambulance would come and remove the family member to a place unknown and no one could visit them. There was also no communication from the ETUs as to the status of the patient, or even at which ETU they were being treated. Traditionally, family members are cared for at home and if they are admitted to a hospital, the patient's family still cares for them, bringing food daily and bathing the patient, among other normal caregiving activities. People were 'hiding' sick family members in their home and caring for them as they always had, this led to further spread of Ebola. Entire families were wiped out due to this fear-based practice, also highlighted in Ngo et al[8].
Program component to counter this FBR: *Active case finding:*	
Active case finding was necessary to identify people displaying symptoms before they could infect others in their family. These active case finders could also reassure suspect Ebola patients and their families that they would receive care in the ETUs and the quarantined family would be supportive. They could provide evidence-based information to the families about the steps that must be taken in order to isolate the suspect patient and care for the family. Developing a direct communication line between the ETUs and the families was also imperative. No one can imagine the pain of surrendering a family member who may very well die to the care of strangers in an ambulance, and then never knowing where they are being cared for or what has happened to them.	
FBR 3	**Denial of the disease and questioning its provenance**
	People continued to practice risky behaviors and relied upon traditional preventions such as magic spells and herbal medications.
Program component to counter this FBR: *Evidenced-based community education*:	
Evidence-based community education about Ebola and what happens in the ETU was crucial. This information had to come from a trusted source in the community in order to increase compliance with necessary epidemic restrictions, limiting the spread of disease and decreasing the mortality if people could be treated earlier, as affirmed by Pellechia et al.[9]	

Figure 3. Fear-based responses.

workers,"[2] specifically in the context of this Ebola epidemic in West Africa, but that same recommendation can be easily applied to all types of emergency responses.

During the assessment phase of the United Nations model there is a Multi Cluster/Sample Initial Rapid Assessment (MIRA) process outlined. This step does include information gathering at the community level, but only allows for a "good enough" approach.[12] Emphasis is placed on the fact that community level information should be gleaned from secondary data review and external direct observation in the first phase of a response. This has proven useful in more static response, such as hurricanes or tsunamis. We propose that this is inadequate and does not allow the responders to understand the full context of the crisis, and, therefore, how to adequality address it. This is particularly true when the crisis is exacerbated by human behavior and fear-based responses. Our findings correlated with a similar assessment done in Liberia by The Ministry of Health the WHO offices in that country.[6]

We propose that community level information be gathered at the same time as government and I/NGO organizations are arriving and coordinating. We provided an example of a model that is rapid and easily implemented but has enormous impact on the depth and breadth of the response, by gaining a deeper understanding of the social anthropological drivers of behavior. Then this information can be combined with the medical response to develop a relief pathway for the impacted communities. An interdisciplinary model that pauses, for just a moment, to explore the boundaries of those intrinsic systems, will be stronger and more quickly able to respond to the unfolding crisis.

Fear-based responses had an impact on the current global pandemic, potentially accelerating the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes COVID-19. Early in the pandemic, studies examined the impact fear had on how people absorbed and interpreted information related to the virus. Salvi et al, showed that people who were afraid were more likely to believe and share false information about the

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virus.[13] This further reinforces the paper's argument that gathering information on the causes of FBRs needs to be integrated into the response as well. An early, and targeted focus on the root causes of FBRs might support slowing the spread of disease, potentially saving lives and money.

More research in the field of community-based interventions during an emergency response is desperately needed. This model has only been tested in this Ebola epidemic, and further testing in additional settings would be beneficial to demonstrate its importance and impact. Public health emergency preparedness (PHEP) focuses on the institutional and medical capacity, which is extremely important. We believe that the community capabilities and insights are equally important and should be considered at all phases of the response. This collaboration will lead to better distribution of resources and improved outcomes for all stakeholders, affirmed by Ramsbottom et al.[14] Biological crises versus natural disasters do offer different contexts, but the same model could easily apply. We strongly concur with the declaration of Horwood et al. "Now is the time to consider how to bring social science into the center of future pandemic surveillance, response, community preparedness, and health system strengthening."[15]

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Ethical standard. Approved consent was obtained from Ghent University, and we confirm that the research abided by the principles in the Declaration of Helsinki

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