



Humanitarian aid policy changes following the 2010 cholera outbreak in Haiti

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The current cholera outbreak in Haiti arose as a result of inadequate humanitarian aid management by the United Nations following the 2010 earthquake in this country. Nepalese peacekeepers spread the water-borne disease through improper sanitation and waste disposal, resulting in re-emergence of the infection after 150 years. In 2016, the United Nations formally apologized for its role in the spread of the cholera epidemic that has killed more than 9,000 Haitians to date. Though many studies discuss the origin of the epidemic, there is a lack of comparison between initial response practices and current practices. Therefore, it is difficult to understand how disaster relief has evolved as a result of the Haitian epidemic. This paper argues that the training given to humanitarian aid workers to avoid spreading infectious diseases like cholera in areas receiving disaster relief has not sufficiently improved. Specifically, this paper will analyze what recommendations were put forth following the 2010 Haitian earthquake, and to what extent those recommendations have been implemented. By comparing past and current humanitarian aid practices in areas requiring disaster relief, this paper will outline the ways in which humanitarian practices need to change in order to prevent the spread of infections by emergency workers.

Introduction

On January 12, 2010, a 7.0 magnitude earthquake struck the country of Haiti, causing over 230,000 deaths and hundreds of thousands of injuries (Bilham, 2010). Immediately following the earthquake, international aid came pouring in (Farmer et al., 2011). More than 1.2 million people were displaced and forced to live in tents and shacks while the damage was assessed and people were rescued from the remains of buildings and homes (Margesson & Taft-Morales, 2010). In a country still grappling with the aftermath of the strongest earthquake in its history, tragedy struck again nine months later.

On October 20, 2010, 60 cases of acute diarrhea were reported in a hospital in the city of St. Marc. Within the next 48 hours, an additional 1,500 cases were reported in the same hospital. Cholera

had been introduced to Haiti (Walton & Ivers, 2011). This was the beginning of a long battle with cholera, one that the country is still facing now, seven years later. To date, cholera has killed more than 9,000 Haitians (Lewnard et al., 2016). Efforts to contain the disease are proving to be difficult, although the incidence rate has decreased drastically (Morris, 2016; United Nations Secretary General, 2016).

Following the outbreak, rumours of United Nations involvement in the spread of disease began to circulate, and soon there was consensus that cholera was introduced by Nepalese peacekeepers staying at the Mirebalais base in Haiti (Cravioto, Lanata, Lantagne, & Nair, 2011; Morris, 2016). However, the United Nations refused to admit any fault in the cholera epidemic, and stonewalled legal action put forth by the families of victims (Freedman & Lemay-Hebert,

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2015). In 2016, the United Nations finally acknowledged that it played a role in the outbreak, but was careful to word the apology in such a way that the organization stayed within its legal limits of immunity (United Nations Secretary General, 2016).

Following the initial cholera crisis, many studies looked at the factors surrounding transmission and prognoses for the future (e.g., Pfrimmer, 2010, Walton & Ivers, 2011). At the time, solving how cholera had arrived in Haiti, where it was a virtually unknown disease, was most important. Others looked at the international response, and how the cholera crisis could be contained in the future (e.g., Bertuzzo et al., 2011; Date et al., 2011). Current studies focus on the likelihood of eradication and the effectiveness of containment strategies (e.g., Kirpich, Weppelmann, Yang, Morris, & Longini, 2017; Sévère et al., 2016). There is a gap in the literature surrounding how disaster relief policy has changed as result of the epidemic in Haiti. It is important to look at the political lessons learned from the epidemic in order to prevent similar spread of infectious disease through human activities in the future. This paper argues that disaster relief and humanitarian aid policy have not changed sufficiently, leaving open the possibility that similar crises may arise in the future. Though recommendations put forth following the 2010 cholera epidemic in Haiti include changes in aid worker policy, the United Nations has not taken sufficient measures to address these recommendations.

Haiti's Sociopolitical Background

Haiti is the poorest country in the western hemisphere, with over 50% of its population living on less than \$1.25 USD per day prior to the earthquake (Hook, 2012). The country has a history of natural disasters, and has been hit with over nine significant storms over the last 20 years (Hook, 2012). It is also no stranger to infectious

disease; Haiti has the highest incidence of HIV infection in Latin America and the Caribbean (World Health Organization, 2005).

Much of Haiti's current economic turmoil can be attributed to its turbulent history. Haiti became the first black republic following its revolution in 1791 to 1804 (Knight, 2005). However, its self-liberation made it a target of powerful countries that feared similar slave uprisings (Farmer, Gardner, Hoof Holstein, & Mukherjee, 2012). One of these nations was the United States of America, which adopted a law to prohibit trade with the new country, weakening its fragile economy (Hickey, 1982). Additionally, Haiti was forced to borrow 150 million francs from France in exchange for its recognition as an independent country, setting in motion a cycle of debt that Haiti struggled with for years and finally repaid in 1922 (Wamai & Larkin, 2011). The debt and trade boycotts meant that Haiti had little money to maintain its own infrastructure, including that for water and sanitation. Over the years, lack of proper infrastructure has left Haiti vulnerable to water-borne illness and large-scale disease outbreaks, with a lack of access to safe water playing a large role in the current cholera outbreak. In addition, following its revolution, Haiti was led by a series of short-term and corrupt political leaders, and a stable political system was never established (Kivland, 2012; Lantagne, Nair, Lanata, & Cravioto, 2013).

The Cholera Crisis

Cholera is an acute diarrheal illness that results in dehydration due to the rapid loss of large amounts of fluids from the body. The bacterium responsible for cholera, *Vibrio cholerae*, is transmitted from person to person through fecal contamination of water and food (Orata, Keim, & Boucher, 2014). Without adequate rehydration therapy, which often involves replenishing key electrolytes, cholera kills about half of affected individuals (Sack, Sack, Nair & Siddique, 2004).

An estimated 1.4 billion people are at risk of cholera infection in countries across Africa, Asia and South and Central America, where the disease is endemic (Lewnard et al., 2016). Due to high levels of poverty, lack of infrastructure, high illiteracy, and compromised access to drinking water, the disease remains difficult to prevent in these regions (Pfrimmer, 2010). Until major improvements are made to water systems and sanitation infrastructure, the disease will remain endemic in these countries (Clemens, Nair, Ahmed, Qadri, & Holmgren, 2017).

Haiti has the worst water and sanitation infrastructure in the western hemisphere. In 2010, only 69% and 17% of the population had access to an improved water source and sanitation facilities, respectively (Gelting, Handzel, Lockhart, Bliss, & Patrick, 2013). This level of infrastructure is comparable to that found in regions of sub-Saharan Africa (UNICEF & World Health Organization, 2012). In fact, disease has been linked to poor water quality in Haiti as far back as 1900, when Behrmann, Salomon, and Hudicourt (1900) reported on a dysentery outbreak in Nippes. Haiti's poor access to water was also compounded by its unstable political system. During the administration of Prime Minister Jean-Claude Duvalier (1971–1986), enforcers controlled standpipes serving densely populated areas under the pretense of crowd control, and charged pipe users a fee (Gelting et al., 2013). Many were unable to pay this fee, compromising their access to clean water. In addition, high rates of open defecation in rural areas made transmission of water-borne illnesses very likely, as the primary sources of water for many Haitians are unprotected rivers and streams (Patrick et al., 2013).

In Haiti, the onset of cholera occurred in mid-October of 2010, roughly nine months after the earthquake in January (Piarroux, 2011). With approximately 1.3 million Haitians homeless and living in displacement camps, conditions favoured the spread of disease as access to clean drinking

water, sewage disposal, and hygiene was limited (Pfrimmer, 2010). The outbreak in Haiti was surprising, as no cases of cholera had been reported in more than a century, leaving the country vastly unprepared for the large number of patients at the onset of the disease (Piarroux, 2011).

It was originally believed that the outbreak was linked to the earthquake in January, however, rumours of United Nations Nepalese peacekeeper involvement began to spread (Piarroux, 2011). There were also accusations of illegal dumping of waste, and an outbreak of cholera was reported in Nepal's capital city shortly before troops left for Haiti (Piarroux, 2011). Additionally, studies performed on the Haitian strain of cholera have shown that it is identical to recent South Asian strains, which supports the hypothesis that the bacterium was introduced in Haiti by human activity (Chin et al., 2011). In fact, the first cases of cholera were seen near the Nepalese base days after the troops arrived in the Artibonite region of Haiti. Most cases were reported downstream of the Artibonite River in this region; the river is the main source of water for many Haitians in the area due to lack of access to safe drinking water and sanitation infrastructure (Pfrimmer, 2010). Despite evidence substantiating Nepalese peacekeeper involvement, the United Nations denied any role in the cholera outbreak, and claimed immunity against lawsuits filed by families of victims (Freedman & Lemay-Hebert, 2015). To date, the cholera crisis has caused over 9,000 deaths, and efforts to contain the epidemic have proven difficult (Lewnard et al., 2016).

United Nations Peacekeeping Missions

The 2010 earthquake was not the first time that Nepalese peacekeepers entered Haiti. Nepal is one of the member states that contribute to the United Nations' MINUSTAH (*Mission des Nations Unies pour la Stabilization en Haiti*) stabilizing mission in Haiti. MINUSTAH was created in 2004 in response to political turmoil and violence in the

country; its priority was to establish a calm and secure environment (Dorn, 2009). However, due to the rise of gangs and street violence in the capital of Port-au-Prince, MINUSTAH was extended and remained in place at the time of 2010 earthquake, where peacekeepers helped with rescuing citizens, controlling crime, and rebuilding infrastructure. However, there are mixed views regarding the necessity of the MINUSTAH mission: opponents see it as a United States-created entity occupying Haiti to facilitate political change, while proponents see it as an order-restoring mission. It is important to note that Haitians were not consulted about whether they wished for the MINUSTAH mission to take place, and were instead expected to comply with the presence of international peacekeepers, mirroring how Haiti has been treated throughout its history (Howland, 2006).

United Nations Peacekeeping teams are composed of civilian, military, and police units (United Nations, 2008a). Peacekeepers go through three stages of training: pre-deployment, early deployment, and ongoing training. Early deployment training consists of various instructional modules that provide a basic understanding of peacekeeping principles, guidelines, and policies (United Nations, 2017). However, member states are responsible for delivering this pre-deployment training to all personnel sent to the United Nations (United Nations, 2017).

In 2008, the United Nations conducted a training needs assessment survey of field personnel (United Nations, 2008a). They found that, of the 5,850 respondents (composed of civilians, military, and police), 60% said they had not received pre-deployment training specific to United Nations Peacekeeping before arrival at their mission (United Nations, 2008a). The survey concluded that there was little consistency with regard to training facilities, size of mission and training staff numbers, and budget and staffing

between missions. These findings illustrate that the United Nations was aware of inadequacies in its peacekeeper trainings prior to the Haitian earthquake. However, these inadequacies most likely exist because the onus of training falls upon member states rather than the United Nations itself. Therefore, understanding what training Nepalese peacekeepers received prior to deployment in Haiti is difficult.

In October 2010, approximately 11,797 United Nations peacekeepers were present in Haiti (United Nations, 2010), with Uruguay, Nepal, and Sri Lanka as the top three contributors. Nepal has consistently been a top contributor to United Nations peacekeeping missions, providing over 60,000 peacekeepers for over 40 missions (United Nations, 2008b). Nepal's contributions, in tandem with the United Nation's reluctance to confirm rumours of Nepalese peacekeeper involvement in the cholera outbreak, could be the reasons for continued Nepalese peacekeeper presence in Haiti following the outbreak.

United Nations Response

Approximately three months after the cholera outbreak, the United Nations appointed an independent panel of reviewers to assess the outbreak and provide recommendations for prevention of similar crises in the future (Cravioto et al., 2011). This panel was formed in response to the widespread belief that United Nations soldiers from cholera-endemic countries introduced the disease to Haiti. The panel consisted of four international experts from Bangladesh, Peru, the United States and India, and each member was chosen based on their area of expertise: microbiology (Nair), epidemiology (Lanata), cholera (Cravioto), and water and sanitation (Lantagne) (Cravioto et al., 2011; Lantagne et al., 2013). The panel was tasked with investigating the source of the 2010 cholera outbreak in Haiti, carrying out epidemiological, sanitation-based, and molecular analyses (Cravioto et al., 2011).

The panel presented its findings to the United Nations in early May, 2011 (United Nations, 2014).

In carrying out their own investigation, the independent panel also concluded that cholera was introduced to Haiti through human contamination of the Artibonite River (Cravioto et al., 2011; Lewnard et al., 2016). Based on their findings, the panel provided seven recommendations to the United Nations to mitigate the spread of cholera into non-endemic countries through human activities. In 2014, the United Nations published a report outlining its follow-up to the recommendations put forth by the panel in 2011 (United Nations, 2014).

The independent panel recommended administering antibiotic prophylactics to emergency personnel and/or screening for *V. cholerae* to prevent transmission into non-endemic countries, which Haiti was at the time of the earthquake. In addition, the panel recommended that emergency personnel travelling to areas with concurrent cholera epidemics receive vaccinations to prevent infection (Cravioto et al., 2011; Lewnard et al., 2016).

In its follow-up, the United Nations acknowledged that it has designed a pre-deployment training plan meant to reinforce proper hygiene and cholera prevention among its emergency personnel. However, with regard to prophylactic antibiotics and screening, the United Nations stated that it would not implement any policies (United Nations, 2014). Citing divergent views within the medical community on the effectiveness of prophylactic antibiotics, as well as a fear of the proliferation of antibiotic resistant strains of cholera, the United Nations decided it would not implement a policy without scientific consensus on its effectiveness (United Nations, 2014).

In response to the United Nations' decision to forego prophylactic antibiotics, Lewnard et al.

(2016) performed computational analyses of the effectiveness of such prophylactics in preventing *V. cholerae* transmission. Prior to the 2010 outbreak, there were no biomedical interventions in place to prevent transmission of water-borne illnesses, despite Haiti's poor water and sanitation infrastructure (Chretien, 2007). The authors applied computational analyses to the 2010 earthquake, and found that antimicrobial chemoprophylaxis reduced the risk of disease introduction by 90%. However, Lewnard et al. (2016) also acknowledged that the use of antimicrobial prophylaxis is controversial, and instances of local antibiotic resistance have been reported. In addition, it is unclear whether Haitians would have been willing to use biomedical prophylaxes; mistrust of foreigners could potentially have rendered prophylaxis campaigns ineffective.

In addition, the United Nations stated that pre-screening of emergency personnel would not be implemented due to a lack of sufficiently sensitive screening methods. If such methods were to be created in the future, the amount of infrastructure required for mass screening would be very large, and would require careful coordination. As such, there are currently no cholera pre-screening programs in place.

In its third recommendation, the independent panel highlighted the need for on-site fecal waste treatment to prevent contamination of the local environment. Specifically, they recommended systems that inactivate pathogens before disposal (Cravioto et al., 2011). As contamination of the Artibonite River with fecal matter from the United Nations Nepalese base was the most likely source of cholera in Haiti, proper waste disposal is paramount. In their report, Cravioto et al. (2011) also stated that sanitation at the Mirebalais United Nations base (where the Nepalese peacekeepers were staying) was not sufficient to prevent contamination of the nearby waterways.

In its own follow-up report, the United Nations outlined the ways in which it was strengthening its waste management policies: by providing and implementing waste management action plans, improving existing facilities, and installing independent wastewater treatment plants, including in Haiti (United Nations, 2014). However, within the United Nations follow-up, the language used is vague, and no specific examples are given to show where these policies are implemented. Although the independent panel provided these recommendations, it is important to consider how practical they are in an impoverished country like Haiti. On-site fecal waste treatment is the ideal standard; however, Haiti has a lack of sanitation and water infrastructure, raising the question of where peacekeepers would source these waste treatments from, and where waste would be stored (Gelting et al., 2013). Therefore, the United Nations should consider long-term infrastructure creation, rather than short-term solutions, to effectively implement these recommendations.

Cultural Implications

Infectious disease epidemics often lead to changes in belief systems. People in affected areas create management strategies in response to fear of contamination and spread (Trostle, 2005). Oftentimes traumatic life events, such as natural disasters, can lead to increased spirituality, purpose and meaning for existence, and a broadened view of life (Sigmund, 2003). The extent to which trauma evolves into post-traumatic growth depends on the meaning that an individual assigns to a traumatic event. When the earthquake struck, Haitians of all religions considered it to be a divine act of some type of higher being (Payton, 2013). The majority of Haitians believed that God helped them during and following the trauma; however, those who experienced higher levels of loss expressed more disappointment and frustration in their

relationship with God (O'Grady, Rollison, Hanna, Schreiber-Pan, & Ruiz, 2012).

In Haitian culture, certain illnesses are considered to be the result of possession by an evil spirit; injuries, illness, and death can result from spiritual intervention regardless of religious affiliation (Lachman, 1983). Likewise, Haitians believe that certain individuals have the ability to control evil spirits and hex or curse other people (Lachman, 1983). Haitians divide illnesses into those with natural origin (country diseases) and those with supernatural origin (diseases of God). Natural diseases are those caused by the hot/cold humoral system, and maintenance of health involves maintaining the equilibrium of hot and cold in the body (Miller, 2000). Threats to this balance are natural in origin, and include daily actions and environmental components (e.g., wind, sun). Natural illnesses include colds, parasitic infections, and stomachaches, which are treated by herbalists or biomedical interventions (Miller, 2000). Supernatural afflictions are those that are very sudden in onset, and are believed to result from evil curses. These include psychiatric disorders and seizures, and are treated by Vodou priests and priestesses, who rely on prayer, incantation, and rituals to rid the individual of evil possession (Miller, 2000).

The majority of Haitians are Catholic, and some are Protestant. However, the lower class (85% of the population) also acknowledges belief in and practice of Vodou (Desrosiers & St. Fleurose, 2002). Most Haitians practice a combination of Vodou and Catholicism. Haitians believe the real world comprises both the seen and the unseen; Vodou ceremonies involve invoking spirits of African ancestors, who act as the Gods of Vodou (Desrosiers & St. Fleurose, 2002). In Haitian culture, individuals are considered to have socio-cultural obligations to these Gods. When these obligations are not met, the God reminds individuals of their duties by afflicting them with an illness (Vonarx, 2007).

It is important to look to Haitians' views of cholera to understand how the culture has changed following the earthquake. Locally, Haitians believed that foreigners were involved in the spread of cholera by using curses and hexes. Others worried that politicians deliberately created the epidemic as a form of population control, while some considered it to be a divine act of God to punish sinners (Grimaud & Legagneur, 2011). There was no agreed upon origin of the outbreak, and this affected the ways biomedical interventions were accessed. Those who believed foreigners were responsible were less likely to use western medications, while those who considered cholera to be a spiritual illness were more likely to access spiritual care. Haitians may have also worried about stigma and discrimination from western healthcare workers, who view Vodou as a belief system of the uneducated and fraudulent (Miller, 2000). It is important that western healthcare workers recognize personal biases when working with Haitians, and take a culturally competent approach to dealing with illness. For cholera specifically, workers should be aware of Haitian conceptions of disease transmission and mistrust of foreigners, and be as transparent as possible about treatments and causes.

Following the cholera outbreak, many Haitians believed that evil Vodou priests contaminated water sources, which led to the lynching of Vodou practitioners (Grimaud & Legagneur, 2011). In addition, fear of cholera infection resulted in high rates of stigma: patients and cadavers were abandoned, and survivors faced rejection from their communities (Farmer et al., 2011; Grimaud & Legagneur, 2011). In the trauma following the cholera outbreak, Haitians turned to their Vodou system of belief to look for answers regarding the origin of the disease. Opportunities for effective education on the biological origins of cholera existed; however, the United Nations' denial of its own involvement compounded the fear and mistrust Haitians felt toward outside influences.

Discussion & Conclusions

In 2010, a devastating earthquake in Haiti was followed nine months later by an equally devastating cholera epidemic. This epidemic continues today, with thousands killed and many more affected. Families have been broken, and those in areas with limited access to fresh drinking water have been most heavily affected. Lack of sanitation and water infrastructure played a large role in the spread of disease, with these inadequacies tracing back to Haiti's revolution and formation as a republic. Though introduced unintentionally, cholera has ravaged an already impoverished and politically unstable country.

Each year, there are many natural disasters requiring international humanitarian aid. It is important to ensure that the emergency response does not exacerbate crises in these areas, as happened in Haiti. This can only be done through tightened policies and the vigilance of organizations like the United Nations. However, what can be done when these organizations themselves exacerbate crises? Transparency is key to maintaining ongoing and productive relations with affected countries, and the United Nations' denial of its own responsibility for the cholera outbreak played a large role in its strained relationship with Haiti today (United Nations, 2016). It is also important to consider the socio-political history of a country when providing international aid. As Haitians have a pervasive mistrust of foreigners, it is important to find ways to improve conditions through their own government without such a visible foreign presence.

Along with transparency, understanding how organizations respond to crises like these, in terms of both current and future responses, is vital. Measures to contain the spread and reduce the burden of disease are necessary to rid countries of epidemic and endemic infectious diseases. However, it is important to work within the cultural framework of a country to make the most effective change. As Haiti places a high value on

spirituality, incorporating spiritual components of religion or Vodou may create campaigns that are more effective in reaching out to people.

Following the cholera crisis, the United Nations received seven recommendations from an independent panel of experts. Among these were recommendations surrounding antibiotic prophylaxis and pre-screening of aid workers. The United Nations refused to implement these recommendations, citing a lack of scientific consensus on their effectiveness and insufficient technology, respectively.

While the United Nations may be right to show caution in implementing prophylaxes, it is the moral and legal responsibility of the organization to confirm that its aid workers are not bringing in infectious diseases like cholera to non-endemic areas, or aggravating caseloads in endemic areas. Within its reports and follow-ups, the United Nations must acknowledge the limitations it faces while searching for alternate ways to protect the people it serves.

The United Nations should consider what the repercussions of not implementing these recommendations entail. Haiti is a country used to political turmoil and corruption from its leaders. Transparency surrounding implementation may show Haitians that the United Nations has taken the outbreak and the resulting deaths seriously and is ardent about creating policy change. The cholera crisis is just one recent example of infectious disease introduced by human error and activities. More work must be done in policy change and behavioural practices to ensure that it is also the last.

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