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DOI:

[10.1080/17441692.2021.1887315](https://doi.org/10.1080/17441692.2021.1887315)

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Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

Fraulin, G, Lee, S & Bartels, S 2021, "They came with cholera when they were tired of killing us with bullets": community perceptions of the 2010 origin of Haiti's cholera epidemic', *Global Public Health*.
<https://doi.org/10.1080/17441692.2021.1887315>

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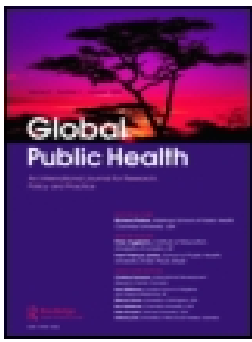
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To cite this article: Georgia Fraulin, Sabine Lee & Susan A. Bartels (2021): 'They came with cholera when they were tired of killing us with bullets': Community perceptions of the 2010 origin of Haiti's cholera epidemic, *Global Public Health*, DOI: [10.1080/17441692.2021.1887315](https://doi.org/10.1080/17441692.2021.1887315)

To link to this article: <https://doi.org/10.1080/17441692.2021.1887315>



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'They came with cholera when they were tired of killing us with bullets': Community perceptions of the 2010 origin of Haiti's cholera epidemic

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ABSTRACT

In 2010 following a catastrophic earthquake, Haiti saw the beginning of what would become the world's largest cholera epidemic. Nepalese United Nations peacekeepers were later implicated as the source of cholera. Our research examines Haitian community beliefs and perceptions, six-and-a-half years after the outbreak began, regarding the origin of Haiti's cholera outbreak. A narrative capture tool was used to record micronarratives of Haitian participants surrounding ten United Nations bases across Haiti. Seventy-seven micronarratives focused on cholera were selected for qualitative analysis from a larger dataset. Three themes emerged: who introduced cholera to Haiti, how cholera was introduced to Haiti, and preventative measures against cholera. With varying levels of confidence, the origins of the epidemic were conceptualised as directly resulting from the actions of the United Nations and Nepalese peacekeepers, exhibiting a distrust of foreign intervention in Haiti and frustration with inadequate water and sanitation infrastructure that facilitated widespread transmission of cholera. This study reinforces the need for additional transparent communication from the UN to address ongoing misconceptions surrounding the cholera outbreak, action to clean water and sanitation practices in Haiti, and for the voices of Haitian citizens to be heard and included in reforming foreign aid delivery in the country.

Abbreviations: BINUH: United Nations Integrated Office in Haiti; ETS: Enstiti Travay Sosyal ak Syans Sosyal; KOFVIV: Komisyon Fanm Viktim pou Viktim; MINUSTAH: The United Nations Stabilization Mission in Haiti; PSO: Peace support operations; SEA: Sexual exploitation and abuse; UN: United Nations; UNFPA: United Nations Population Fund; UNICEF: United Nations Children's Fund

ARTICLE HISTORY

Received 30 June 2020
Accepted 12 January 2021

KEYWORDS

Cholera; Haiti; MINUSTAH; peacekeeping; United Nations

Introduction

On the heels of a devastating earthquake 10 months prior, in October of 2010, the government of Haiti declared a cholera epidemic that quickly spread to all departments across the country (Centers for Disease Control and Prevention [CDC], 2019). Cholera had not previously been documented in

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Haiti (Houston, 2020), and the outbreak occurred at a time when the already precarious health care infrastructure had experienced massive destruction due to the 7.0 magnitude earthquake in January of that year (CDC, 2019; Frerichs et al., 2012; Houghton & Norris, 2018; Piarroux et al., 2011). Over 820,000 (CDC, 2019) cholera cases have since been reported in Haiti and an estimated 9000 (CDC, 2019) – 10,000 (Houghton & Norris, 2018) people have died.

Vibrio cholerae is the bacterium that causes cholera, an acute diarrheal illness that can be quickly life-threatening, if not treated appropriately and promptly (CDC, 2020). The particular strain of *Vibrio cholerae* identified in the Haiti epidemic (serogroup O1, serotype Ogawa, biotype El Tor) is associated with particularly severe symptoms (Piarroux et al., 2011). Cholera is most prevalent and most difficult to eradicate, in contexts with inadequate water and sanitation infrastructure (Tauxe, 2014). This made it particularly challenging in Haiti, where in 2010, only 17% of the population had access to improved sanitation and 69% to improved water sources (World Health Organization & United Nations Children's Fund, 2012).

The United Nations Stabilization Mission in Haiti, known by its French acronym, MINUSTAH, was a peace support operation (PSO) sanctioned by the United Nations (UN) in 2004 to address Haiti's political instability and was operational until 2017 (UN, n.d.-b). Its successor, the United Nations Mission for Justice Support in Haiti (MINUJUSTH) was operational between 2017 and 2019. However, there is still a significant UN presence in Haiti. The United Nations Integrated Office in Haiti (BINUH) became operational in October 2019 and continues its work to strengthen political stability and good governance (United Nations, n.d.-a). The current state of foreign influence within Haiti also must be understood within the post-colonial context and long history of intervention from foreign bodies. One notable example of this is the US occupation of Haiti from 1915 to 1934. While this occupation was initiated with the justification of preserving Haitian independence, it did little to aid Haiti's development as a sovereign nation but rather exasperated economic debt and political corruption (Lennox, 1993). Additionally, over the years, several humanitarian and foreign aid debacles have been documented in Haiti, including corruption within the aid industry and interference in Haitian politics (Schwartz, 2008).

From the beginning of the cholera epidemic, various hypotheses arose to explain how and why *Vibrio cholerae* had surfaced in Haiti. The climatic hypothesis was based on the premise that *Vibrio cholerae* is an aquatic bacterium that could have been already living dormant in coastal waters surrounding Haiti (Jutla et al., 2013; Knox, 2010; Parker, 2010). Some experts proposed that the earthquake had caused the bacterium to enter the drinking water and therefore cause illness for the first time in October 2010 (Parker, 2010). Other proponents of the climatic hypothesis believed that natural rises in water/air temperature and salinity around the Bay of Saint Marc and river tributaries in Haiti's Artibonite Department were responsible for activating the bacterium (Jutla et al., 2013; Knox, 2010). The human hypothesis, in contrast, first arose when reporters became aware of sanitary issues at a MINUSTAH base camp staffed by Nepalese peacekeepers in Meille, a village in Haiti's Central Department (Katz, 2010a; Walker, 2010). Reportedly, local community members told journalists faecal waste was leaking from an overflowing septic pit near the Nepalese camp into the river below, a tributary of Haiti's largest river, the Artibonite (Frerichs et al., 2012).

A 2011 genomic and epidemiological analysis traced Haiti's sentinel cholera case to Meille and revealed that Haiti's *Vibrio cholerae* strain was an identical match to a strain in Nepal that had caused a cholera epidemic in September 2010, immediately prior to a contingent of Nepalese peacekeepers deploying to Haiti (Piarroux et al., 2011). Finally, an independent panel convened by the UN in 2011 concluded that the Haiti cholera outbreak was caused by contamination of the Artibonite River with a 'pathogenic strain of South Asian type *V. cholerae* as a result of human activity' (Cravioto et al., 2011, p. 29).

Currently, there is a paucity of literature examining local perceptions around cholera in Haiti, especially regarding perceptions of the epidemic's origin and the UN's involvement. Four of the five existing studies on local perceptions focused on health communication and perceptions of water, sanitation and hygiene (WASH) practices related to cholera prevention (Beau de Rochars

et al., 2011; Childs et al., 2016; Guillaume et al., 2019; Williams et al., 2015). The only academic article examining local perceptions around cholera's origin in Haiti was published at the peak of the epidemic in 2011 before the UN's role in introducing the bacterium had been formally established (Grimaud & Legagneur, 2011). Given all that has transpired in the interim, we conducted the current analysis to understand local knowledge of and attitudes towards the origin of cholera in Haiti six and a half years after the epidemic began.

Methods

Materials and methods

We used SenseMaker, a narrative capture tool, to conduct a cross-sectional study in 2017. The original research was intended to examine local perceptions of interactions between MINUSTAH personnel and Haitian women/girls. Separately published analyses from the same dataset have focused on sexual exploitation and abuse (SEA) by MINUSTAH personnel (King et al., 2020) as well as peacekeeper-fathered children in Haiti (Lee & Bartels, 2019). However, given SenseMaker's broad, open-ended story prompts (see Appendix), participants shared narratives on a variety of topics, and cholera was frequently mentioned, in addition to peacekeeper-associated SEA, in relation to MINUSTAH. The narratives shared specifically about the 2010 cholera outbreak ($n = 77$) were deemed significant enough to merit a separate analysis, which is presented here.

Location and participant selection

Ten UN bases across seven locations were purposively chosen for inclusion based on troop-contributing countries staffing the base, base size, years of base operation, geographic variation within Haiti, and urban/rural designation. A convenience sample of prospective female and male participants was approached in public locations including market areas, shops, and public transportation stops/depots within a 30-km radius of each base. Individuals had to be at least 11 years old to participate. There was no prior established relationship between the authors and participants.

Survey

Cognitive Edge's SenseMaker is a narrative capture tool that extracts meaning from micronarratives shared by male and female participants on a topic of interest (in this case interactions between women/girls in Haiti and MINUSTAH personnel). In response to a story prompt, participants shared a micronarrative, which was audio recorded on the tablet.

The SenseMaker survey was written in English, translated to Haitian Kreyol, and then independently back-translated to check for accuracy. Translation discrepancies were resolved by consensus. The SenseMaker survey prompted for stories about the experiences of women/girls living in the vicinity of UN bases since the researchers were interested in investigating local perceptions around peacekeeper-perpetrated-SEA. Not mentioning or directly asking about SEA allowed stories about a broad range of topics to emerge more naturally from the lived experiences of participants (Cognitive Edge, 2017), and cholera therefore emerged as an important theme. A pilot test of the survey was conducted among 54 participants to improve clarity, ease of response, participant comfort and translation inaccuracies.

Study implementation

Twelve research assistants were purposively selected from two local partners, Komisyon Fanm Viktim pou Viktim (KOFIV) and the former Enstiti Travay Sosyal ak Syans Sosyal (ETS). The ETS

research assistants were undergraduate students in social work and the KOFAVIV research assistants were volunteers with the organisation who had experience working with survivors of sexual and gender-based violence. All research assistants completed a four-day training before data collection on topics including SenseMaker methodology, use of an iPad, research ethics, informed consent, a review of the survey with role-playing sessions, data upload, and management of adverse events and program referrals.

In approaching potential participants, research assistants explained that the purpose of the study was to understand interactions between local women/girls and MINUSTAH personnel. Single, face-to-face interviews were conducted in private by the team of 12 local research assistants in Haitian Kreyol and the shared stories were audio recorded. Recorded micronarratives were transcribed and translated to English by native Kreyol speakers.

Ethical approval

All interviews were conducted confidentially, and no identifying information was recorded. Informed consent was reviewed in Haitian Kreyol and indicated by tapping a consent box on the tablet. Written consent was waived as the study involved minimal risk given that it did not mention or ask questions about SEA and participants were able to share stories on whatever experience they chose. Participants as young as 11 were included because anecdotally we knew they were affected by SEA and it would have been more unethical not to include their perspectives. Parental consent was not sought since the girls were considered mature minors and asking parents for consent can introduce bias and lead to intra-family conflict (Weir, 2019). While the overall study involved minimal risk, due to the possibility of re-traumatisation for some participants, KOFAVIV research assistants were present to provide psychological support, and referral cards for counselling from KOFAVIV and legal counsel from Bureau des Avocats Internationaux were provided. Interviews were brief (each lasting about 15 min) and since participants did not travel to take part, no compensation was provided. The Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board approved this study (protocol #6025181). Local community partners guided cultural sensitivity and ethical considerations.

Analysis

At the end of the survey, research assistants were asked to identify whether specific pre-determined topics were discussed in the shared micronarrative (cholera, sexual abuse and exploitation, etc.). In the first level of our current analysis, a sub-set of stories identified as being about cholera ($n = 77$) were selected for thematic analysis from the broader dataset of ($n = 2541$) according to Braun and Clarke (2006). It should be noted that many narratives briefly mentioned cholera in addition to talking about SEA or another topic due to the open-ended nature of SenseMaker. However, we chose only to include the first-person cholera stories and cholera stories that were about family members or friends in our analysis. Working independently using separate Excel spreadsheets, initial open coding and review of the entire transcript was done by two researchers (GF and SB). According to Saldaña, each researcher initially coded the data line-by-line facilitating the identification of diverse feelings, ideas, and experiences that emerged from each participant's shared story (2012). These initial, first-level codes were derived from the text. Both researchers then reviewed the entire transcript again agreeing on first-level codes, each of which represented a singular idea, feeling or experience. In the second level of analysis, initial codes were organised into three categories: perceptions around who introduced cholera to Haiti, how cholera was introduced to Haiti, and preventative measures against cholera. These categories were not mutually exclusive, and stories were often placed into more than one. Through discussion and consensus, researchers then selected salient stories from each category to illustrate a diverse range of perceptions about MINUSTAH and cholera in Haiti.

Triangulation between researchers was key to the analysis, and the research team engaged in critical dialogue throughout. Constant comparison ensured that each code or story was considered in relation to previous and subsequent data and that each story was considered as a whole. An audit trail of all levels of coding, as well as memos, was kept.

Results

Thirty-six percent of stories about cholera were shared in the Central Plateau of Haiti, with another 26% from Port-au-Prince. The majority of participants were under the age of 45 (77.92%) and were male (64.94%). Most participants had either some/completed primary (28.57%) or secondary (45.45%) education and considered their households to have average income (58.44%). Full demographics are provided in [Table 1](#).

Who introduced cholera to Haiti

In one way or another, most participants referenced MINUSTAH in their micronarratives about Haiti's cholera epidemic. Our thematic analysis identified four particular themes: (i) Speculation that MINUSTAH was responsible, (ii) Recognition that cholera was new to Haiti, (iii) Reported proof that MINUSTAH introduced cholera and (iv) Specific naming of Nepalese peacekeepers as being responsible. Each theme is presented below with a series of illustrative quotes.

Table 1. Participant demographic characteristics ($n = 77$).

Demographic	Value	<i>n</i>	%
Age	11–17	7	9.09
	18–24	12	15.58
	25–34	23	29.87
	35–44	18	23.38
	45–54	8	10.39
	>55	7	9.09
	Prefer not to say	2	2.60
Sex	Female	27	35.06
	Male	50	64.94
Education	Some primary school	14	18.18
	Completed primary school	8	10.39
	Some secondary school	22	28.57
	Completed secondary school	13	16.88
	Some post-secondary school	9	11.69
	Completed post-secondary school	4	5.20
	No formal education	7	9.09
^a Income level	Poor	29	37.66
	Average	45	58.44
	Well-off	3	3.90
Location	Hinche	16	20.78
	Cité Soleil	13	16.88
	Saint Marc	12	15.58
	Leogane	12	15.58
	Charlie Log Base/Tabarre	7	9.09
	Port Salut	6	7.80
	Morne Casse/Fort Liberté	1	1.30
	Cap Haitien	10	12.99

^aWe assessed household income through a proxy measure which asked if the family owned any of the following items: (1) mobile phone, (2) radio, (3) refrigerator/freezer, (4) any type of motorised vehicle, or (5) electricity/solar panels. Participants could choose as many items as was applicable or they could choose 'none of the above.' Income was then categorised as follows: access to none or 1 of the 5 items was rated as 'poor,' access to 2 or 3 of the items was rated as 'average' and access to 4 or 5 of the items was rated as 'well-off.'

Speculation that MINUSTAH was responsible

Some participants simply stated that MINUSTAH was the vector of cholera while others reported that the disease had been brought to Haiti by MINUSTAH.

They talk about MINUSTAH as the vector of cholera, they had brought cholera and many kinds of things to Haiti. The disease in the country had been brought by MINUSTAH according to what I have heard. (ID1389, male participant in Saint Marc who referenced Argentinian troops)

Other participants introduced more nuanced opinions about MINUSTAH having introduced cholera. For example, the participant below implied that MINUSTAH had intended to harm Haitians by introducing the disease.

They [MINUSTAH] came with cholera when they were tired of killing us with bullets. They found that bullets were not good so they gave us a sickness ... the UN knows very well that MINUSTAH caused the disease ... (ID511, male participant in Cite Soleil who referenced Brazilian troops)

Several participants reported hearing that MINUSTAH was responsible for the cholera outbreak but were careful to qualify their statements by saying that they were not eyewitnesses themselves and/or could not confirm the allegations.

We heard on the radio that MINUSTAH had just released something in the water ... I cannot justify the facts with my own eyes, that MINUSTAH was the one causing this disease because I did not see them carrying it in a bag or any other object. (ID391, female participant in Port-au-Prince, troops unspecified)

Recognition that cholera was new to Haiti

There was widespread recognition that cholera was not native to Haiti and that it had been introduced. As in the following example, most participants named MINUSTAH specifically as being responsible for having brought the illness.

We never had this disease here in the Central Plateau ... As soon as the MINUSTAH arrived, the disease spread to everyone ... (ID2074, male participant in Hinche who referenced Nepalese troops)

Not only was the introduction of cholera linked to MINUSTAH, but responsibility for cholera-related deaths was also clearly attributed to the PSO.

It wasn't here in the country. MINUSTAH came, there wasn't cholera and then a bunch of people died because of MINUSTAH. (ID176, male participant in Cite Soleil who referenced Brazilian troops)

In a number of instances, participants also referenced foreigners or 'whites' as being responsible for introducing cholera in Haiti. These sentiments are not surprising given Haiti's history of French colonisation and US occupation from 1915 to 1934. That participants in our study were not fully informed about the events leading up to the cholera epidemic or about the response to it, is also in keeping with a long history of Haitians being excluded from the dominant narrative about French rule in the country until literacy campaigns were initiated in the post-Duvalier period (Wilentz, 1990).

... after MINUSTAH's arrival, all these problems came including this cholera breakout. All this began when the whites came—that's when people started to die in the countryside ... (ID1802, male participant in Hinche, troops unspecified)

Reported proof that MINUSTAH introduced cholera

A smaller number of participants were more confident in their statements about MINUSTAH's culpability. A few individuals referenced laboratory confirmation as having implicated MINUSTAH, as illustrated in the following narrative.

... MINUSTAH is the one who led cholera into the country, according to some laboratory research from the United States. They have seen that the germs that caused cholera in Haiti were from the MINUSTAH. (ID449, male participant in Port-au-Prince who referenced Nepalese troops)

Another participant indicated that MINUSTAH left cholera in Haiti after leaking human waste into the Artibonite River and causing illness. She concluded confidently that MINUSTAH was responsible.

MINUSTAH left cholera in the country after they put excrement in the Artibonite River... that's why we received lots of illness in our country. So I can say MINUSTAH brought us cholera. (ID803, female participant in Leogane, troops unspecified)

Specific naming of Nepalese peacekeepers

Many participants simply referred to MINUSTAH as having introduced cholera to Haiti or MINUSTAH as having been responsible for the epidemic. However, a smaller number of participants specifically named Nepal as the country of origin for the bacterium or directly implicated Nepalese peacekeepers as having introduced the illness in Haiti.

... everyone knows the problems caused by the disease that the Nepalese forces brought here with them. Many Haitians died because of that disease that the Nepalese forces brought. (ID1056, male participant in Saint Marc who referenced Nepalese troops)

Finally, in their implication of Nepalese peacekeepers, a few participants also expressed a perception that foreigners intended to harm Haiti, as illustrated by the following participant who said the Nepalese wanted to 'step on' Haitians because Haiti is a 'big nation with no money.'

The Nepalese soldiers were here. The white man really wanted to step on us because everyone knows that we are a big nation with no money ... There were some investigations that proved that it was the Nepalese soldiers that defecated in the water. (ID1725, male participant in Port Salut who referenced Nepalese troops)

How cholera was introduced to Haiti

There were several mechanisms described by participants through which MINUSTAH was believed to have introduced the cholera bacterium in Haiti. Broadly, these were divided into (i) Concerns about water and sanitation, (ii) Specific mentions of the Artibonite River and (iii) Conspiracy theories.

Concerns about water and sanitation

Some participants were aware that cholera resulted from contamination of water supplies. For instance, the following participant indicated that members of MINUSTAH released garbage into the water and reported seeing peacekeepers wandering near the water at night. He believed that MINUSTAH had 'poisoned the water' and 'prepared an illness.'

I can say the MINUSTAH brought the cholera ... Sometimes we saw in the river some waste and garbage, in fact, the MINUSTAH usually released these things in the river. After we realized people usually got illness after a little time ... In this time we knew that it was the illness that the MINUSTAH prepared for us in order to poison the water. (ID593, male participant in Port-au-Prince who referenced Brazilian troops)

A female participant in Leogane described how her son returned home with a bucket of water that was 'black and very fatty.' She believed it had come from the river which was contaminated with trash.

MINUSTAH used to give water in a bucket. I have a son who came one day with that water ... it was black and very fatty; I had to rush him to throw it away. It was that same water that was giving people cholera, it comes from the river, that water used to pass by trash. (ID875, female participant in Leogane who referenced Brazilian troops)

Specific mention of the Artibonite river

Other participants provided details that included contamination of the Artibonite River by members of MINUSTAH. The Artibonite, the longest river in Haiti, serves as an important source of

drinking and cooking water for the people who live along its course and is also used to irrigate crops such as rice in the Artibonite Valley. The following participant shared his understanding that MINUSTAH peacekeepers from Nepal had dumped human waste into the river. He also stated his belief that the Nepalese were also affected by the cholera but that they had access to medical treatment to treat the disease.

It is said that the root of the cholera is in Nepal ... in the lower plateau, it is said that faeces were dumped in the Artibonite River. Then people used the river water and the disease became disruptive. But the Nepalese soldiers, it said that it's a disease that's in their blood; but they have great medicines that breaks down the strength of the disease. (ID1857, male participant in Hinche who referenced Nepalese troops)

Only a few participants directly mentioned that the UN had acknowledged MINUSTAH's role in introducing cholera to Haiti, as was the case in the following narrative.

The MINUSTAH came and defecated in the water of Artibonite. This ended up poisoning every Haitian. There were some investigations that proved that it was the Nepalese soldiers that defecated in the water. Even the United Nation recognizes that it is the MINUSTAH soldiers that gave us cholera. (ID1725, male participant in Port Salut who referenced Nepalese troops)

Conspiracy theories

Some participants shared conspiracy theories about the introduction of cholera in Haiti. For example, the participant quoted below believed that MINUSTAH personnel had distributed a powder in the community and that this powder was responsible for cholera. It is unclear if reports of powder as the causative agent were linked in any way to uprisings against local Vodou practitioners who were believed to have themselves 'fashioned a magic powder to spread the [cholera] infection' (Katz, 2010b).

What I have been told about cholera is that MINUSTAH brought it here. They came with a powder that gives cholera because they weren't welcome here. That powder they spread it everywhere. You understand? A powder that itch. They are the one who brought it here. (ID1818, male participant in Hinche, troops unspecified)

Based on a personal experience while out after curfew, the following man shared his belief that the UN had dropped a foreign substance into the river from a helicopter late at night, thereby introducing cholera to Haiti.

... they claim the cholera was spread due to MINUSTAH ... I went to take a bath in the river and suddenly spotted a helicopter descending a few miles away very close to the ground. A few minutes later the water changed colour and turned green as if someone dumped green paint into the river so I left. A couple days later I heard they banned people from using the water from the river or bathing in it. (ID2438, male participant in Cap Haitian who referenced Nepalese troops)

Preventative measures against cholera

A number of participants also discussed how they had tried to protect themselves and their families from cholera. In our thematic analysis, we categorised these themes as: (i) Protective measures perceived as effective, (ii) Doubt about the utility of preventative measures and (iii) Frustration about preventative measures.

Protective measures perceived as effective

In the following quote, similarly to many others, a participant talked about recommendations shared with the community about how to prevent cholera and ends by stating that if you take a lot of precautions, you can keep the illness at bay. Such narratives imply that hygiene and sanitation awareness-raising campaigns were effective in at least some areas of the country.

They tell you that as long as you keep your home clean, you will avoid cholera. The food you eat must be cooked, the clothes you wear must be clean, be well exposed to the sun, and when you are getting water,

you should treat the water and collect it in a clean container just to avoid cholera ... as long as you take a lot of precautions, the illness backs off a little. I can say that I did not get cholera. (ID2000, female participant in Hinche who referenced Brazilian troops)

Doubt about the utility of preventative measures

Other participants shared their doubts about whether the preventative measures actually protected one from cholera with some, like the following participant in Hinche, expressing frustration about having contracted the illness despite having followed the recommendations for prevention.

I was a victim of cholera, and it was not that I did not take precautions ... as they said that because of the cholera you should wash your hands well, you should cook your food well, things like that ... Some people were less careful but did not get cholera. The person who made the effort is the one who caught it. (ID1857, male participant in Hinche who referenced Nepalese troops)

Another participant reported that it was not because of sanitation that she became infected. Instead, she shared a perception in her community that she became infected because she did not fear the disease.

They say it is because I'm not afraid of it that I caught it. It's not unsanitary stuff that caused me to have it. They always come to see how we do things and always used to tell me to wash my hands before eating. Myself, when I had cholera, I did not know how I got it. (ID1592, female participant in Port Salut who referenced Brazilian troops)

In contrast, there were a few participants who did not contract cholera despite not taking any precautions. In some cases, like the following narrative, this left individuals to doubt that cholera was actually caused by bacteria in drinking water.

... now they are saying that it is due the germs/microbes that caused it, but if it were germs, a lot of people living in the street would have it. I would die first because I never drink treated water ... (ID511, male participant in Cite Soleil who referenced Brazilian troops)

Frustration about preventative measures

A small number of participants expressed frustration about preventative measures implemented to control the spread of cholera. For instance, this male participant in Cap Haitian spoke about having to use a more distant water source and about the inconvenience of having to continuously treat water.

For nearly a whole year, we couldn't use the water because they said that the germ that the MINUSTAH dumped into the water can affect you and infect everyone. We were so scared and they said the only way you can take a bath was in a faraway source of water that was ground filtered and must be treated with Clorox and other chemicals that kill bacteria. (ID2438, male participant in Cap Haitian who referenced Nepalese troops)

Thinking longer term, the following participant from Saint Marc discussed the necessity of having to take precautions in the future, particularly in the setting of extreme weather that might disrupt the groundwater, suggesting that he was familiar with the climatic hypothesis. He ended by sharing how unsafe he felt as a result.

Although you may take every precaution, follow all the recommendations, respect all the required rules of hygiene, the source of this disease will be hard to get rid of in the country ... I am not safe, no one is safe, cholera hurt me. (ID1284, male participant in Saint Marc who referenced Nepalese troops)

It is important to note that had timely and factual information about the origin of the cholera outbreak and how to protect oneself from it been shared with local community members in 2010–2011, many cases of cholera could have been prevented and many deaths averted.

Discussion

Despite the extensive foreign academic controversy surrounding the origin of *Vibrio cholerae* in Haiti (Frerichs et al., 2012; Jutla et al., 2013; Katz, 2010a; Knox, 2010; Parker, 2010; Piarroux

et al., 2011; Walker, 2010), the voices and perceptions of Haitian community members have gone largely unheard. Understanding their beliefs and perceptions is of pivotal importance as they may impact overall perceptions about the UN and foreign aid more broadly. Furthermore, understanding and recognising local knowledge and perceptions is important for understanding the long history of tangled accountability around foreign aid in Haiti. For this reason, we present local knowledge of, and attitudes towards, the 2010 introduction of cholera to Haiti using narratives from 77 community members based in different locations around the country. To the best of our knowledge, this analysis is the first since Grimaud and Legagneur (2011) to examine local perceptions about the origin of Haiti's cholera epidemic.

Our analysis has demonstrated that Haitian citizens are cognizant of the UN's culpability in the cholera epidemic in various ways: MINUSTAH was believed to be responsible for the epidemic, cholera was recognised as novel to Haiti, and peacekeepers were thought to have brought the bacterium from Nepal. While perceptions of cholera's introduction to Haiti varied, many narratives highlighted the impact of the epidemic on local community members and how it exacerbated distrust of foreign intervention in Haiti. Furthermore, participants expressed frustration about the circumstances that facilitated cholera transmission in Haiti (e.g. unsafe water supplies) and recognised the lasting impact of the epidemic by setting expectations for future preventative measures required to protect themselves from cholera.

Even when perceptions were correct, some participants demonstrated doubt about cholera's origins in Haiti, highlighting that perspectives were based on rumours, media reports or myths rather than direct and transparent communication from the UN. Arguably more problematic, however, were the incorrect perceptions and conspiracy theories including those stating that cholera had been introduced intentionally and that the epidemic was part of a plot to take over Haiti. Thus, our study participants often perceived MINUSTAH personnel as a threat to the health of Haitians rather than 'keepers of the peace.' These speculations reflect Haiti's historical struggle as a sovereign nation against foreign intervention. These perceptions are problematic for the reputation and moral authority of PSO in Haiti and beyond. For instance, Talentino (2007) concluded that resentment towards peacekeepers is likely to lead to obstructionism as a result of mistrust, while Gordon and Young (2017) reported that host community cooperation is dependent upon how positively local community members perceive peacekeepers. Although not the intention of the current study, based on the doubts and negative perceptions presented by participants in our research, we speculate that the cholera epidemic in Haiti likely had a further detrimental impact on the ability of MINUSTAH, and then MINUJUSTH, to successfully fulfil their mandates in the later years of their existence.

While it was argued at the beginning of the epidemic that placing blame was unhelpful to those working to combat the disease (The Lancet Infectious Diseases, 2010), we argue that empathy and accountability are not mutually exclusive. It was not until December 2016 that the UN apologised for its role in the outbreak and subsequent epidemic. Acknowledging their 'moral responsibility' (United Nations, 2016), the apology came with a proposed aid package based on voluntary contributions from UN member states that has made little funding progress since its conception (Alston et al., 2020). Additionally, the UN remains immune to legal action, illustrating the ambiguity and lack of accountability regarding the organisation's actions under international law (Houston, 2020). The UN's persistent denial of any role in the outbreak despite possessing evidence to the contrary and its dismissal of the importance in understanding cholera's origins in Haiti (International Human Rights Clinic Harvard Law School et al., 2020) also strengthen arguments that the UN took great lengths to cover up MINUSTAH's role in the epidemic (Frerichs, 2016). From this perspective and the results of this research, cholera in Haiti is more than an infectious disease epidemic – it changed the environment of PSO and initiated an important dialogue on accountability within the UN as a powerful, multilateral organisation.

Our results exhibit a local mistrust of foreigners, similar to the findings of Grimaud and Legagneur (2011) who reported that participants suspected cholera was not 'natural,' and indicated that

'It was a disease brought by foreigners to exterminate us and take our land' (p. 27). Mistrust of foreigners is likewise reflected in our data, with a broader reference to 'whites' being responsible for the outbreak and statements such as 'they came with cholera when they were tired of killing us with bullets.' The Haitian/white dichotomy is also noteworthy, with the Nepalese seemingly included in the 'white' category and this perhaps contributing to local perceptions that the UN is part of ongoing white colonisation of Haiti despite many peacekeepers being non-white.

As our data was collected mid-2017, nearly 7 years after the outbreak's origin and reports of MINUSTAH waste management misconduct, this suggests that the UN's role in the 2010 cholera outbreak was damaging to the reputation and legitimacy of international aid in Haiti. The UN's ongoing presence in Haiti consisting of BINUH, the United Nations Children's Fund (UNICEF), the World Food Program, the United Nations Population Fund (UNFPA), and more have likely also faced detrimental implications to their reputations and development work in the country.

However, it is important to note that previous aid scandals in Haiti had already called into question the effectiveness of Western-led development work (Merope-Synge, 2018; Schwartz, 2008). MINUSTAH has been widely implicated in sexual misconduct against local community members (King et al., 2020; Vahedi et al., 2019), including fathering and abandoning children (Lee & Bartels, 2019), and this too undoubtedly has negative repercussions for the UN. Furthermore, foreign mistrust must also be contextualised within Haiti's history of French colonisation and US occupation.

Results reveal some distrust surrounding preventative measures such as water chlorination and hand washing. Additionally, sentiments of a popular Haitian proverb '*Mikob pa touye ayisyen*' or '*microbes do not kill Haitians*' (Grimaud & Legagneur, 2011, p. 27) were present in our narratives. However, Beau de Rochars et al. (2011) reported that in Port-au-Prince during the height of the outbreak, after hygiene messages were distributed, 94% of people used soap to wash their hands and 74% indicated using improved latrines. This demonstrates that most Haitians were in fact open to preventative measures aimed at reducing the spread of transmissible diseases such as cholera, although it is also important to remember that Port-au-Prince is not representative of Haiti more broadly, as our data indicate.

Haiti's public health infrastructure has been continually de-prioritised, leading to the original susceptibility to cholera and continual concerns about infectious disease outbreaks. Currently, Haitians still have the lowest access to sanitation and potable water in Latin America and the Caribbean (UN, 2020). This reflects our participants' concern that cholera would be hard to eradicate even with preventative measures (Tauxe, 2014). However, in January of 2020, Haiti marked a milestone: a year free from any new cholera cases (UN, 2020). Haiti must remain cholera-free for two additional years to meet the World Health Organization's criteria to 'end cholera' in the country (UN, 2020). To ensure that Haiti is declared cholera free in 2022, additional resources and attention are needed to improve access to safe water and adequate sanitation (International Human Rights Clinic Harvard Law School et al., 2020).

Our findings must be interpreted within the context of several study limitations. First, the relatively small convenience sample ($n = 77$) is not representative of the Haitian population. Thus, the findings do not represent the views of all Haitians and cannot be generalised. We did not collect data about non-responders. Second, typical SenseMaker narratives are less detailed and briefer than those associated with more traditional qualitative research. Therefore, our results may lack the desired richness and data saturation may not have been reached. Third, because the narrative prompts were open, some participants talked about sexual misconduct, other wrongdoings, or indeed about the positive aspects of MINUSTAH. In answering the subsequent multiple-choice question about the nationality of the troops involved in the story's events, participants may not have responded specifically to cholera. Fourth, the data was collected in Haitian Kreyol and nuances may have been lost in the process of translation. Insecurity and travel restrictions prevented us from being able to return to Haiti to share the results with local community members. Finally, we recognise our positionality and note that as non-Haitian, female academics, the results are interpreted with our own biases.

The research also has several strengths that deserve mention. For instance, the intentionally broad story prompts and interpretation questions helped to gather a wide range of Haitian perceptions about the cholera epidemic's origins and did so with less researcher bias. By keeping the questions open, the research allowed participants' perspectives to flow naturally within their broader lived experiences. Additionally, diverse participant groups were included both within the Haitian Central Plateau and elsewhere representing a variety of different beliefs and experiences. Since no participants were asked about cholera in the interview, the perspectives shared emerged naturally, highlighting that cholera continues to be an important issue from the perspective of local Haitians. Finally, to the best of our knowledge, this is the only study to examine local perceptions of the cholera origins in Haiti since the *V. cholerae* strain matched to that of Nepal and since the UN issued a formal apology for its role in the epidemic. While much has been written about Haiti's cholera epidemic from an infectious disease and epidemiological perspective, the voices of Haitians have been largely missing and the current research aims to fill this gap.

Conclusions

Aside from the 2016 formal apology, in recent years the UN has been relatively quiet about cholera in Haiti. In keeping with its mission to create conditions for sustainable peace, the UN must communicate openly with cholera victims and the general Haitian population. Additional research to understand how the UN's handling of the cholera outbreak has impacted local opinions about foreign aid would be helpful, including local perceptions on how to rebuild trust in the UN.

The UN has made it mandatory for peacekeepers travelling to and from endemic areas to be vaccinated against cholera and has strengthened guidelines for monitoring camps and the management of wastewater (Piarroux & Frerichs, 2015). However, despite these measures, audits done in 2014 and 2015 found that unsatisfactory waste management had continued in Haiti as well as six other PSO in Africa and the Middle East (Gladstone, 2016). These measures alone are clearly inadequate to make amends for the UN's role in Haiti's cholera epidemic. As an institution with considerable international power and influence, the UN has a responsibility to rectify their actions in Haiti and elsewhere. Drawing on the experiences and knowledge of Haitian citizens, as has been presented here, would be an important first step towards rebuilding trust in foreign aid institutions, setting an important precedent for other countries as well.

Acknowledgements

We are grateful to all the individuals who shared their experiences and perspectives on the cholera epidemic in Haiti. We are indebted to the research team who collected the data and to BAI, KOFAVIV and the former ETS for their support and guidance in implementing this research. The work would not have been possible without the financial support of the Arts and Humanities Research Council and the Social Sciences and Humanities Research Council. We would also like to say thank you to our Haitian colleague who collaborated on the research but did not wish to be identified as a co-author out concern that it might impact future employment opportunities. We appreciate Adam Houston's review and feedback on this manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Arts and Humanities Research Council [grant number AH/P008038/1] and Social Sciences and Humanities Research Council [grant number 890-2016-01110].

Data availability statement

Data are available on Figshare: [10.6084/m9.figshare.12388775](https://figshare.com/figures/10.6084/m9.figshare.12388775)

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Appendix. Micro-narrative prompts.

Describe the best or worst experience of a particular woman or girl in your community who has interacted with foreign UN or MINUSTAH personnel. What happened?

Describe how living in a community with a UN or MINUSTAH presence has provided either a particular opportunity or a danger to a particular woman or girl in the community. What happened?

Describe the negative or positive experience of a particular women or girl who requested support or assistance after interacting with foreign UN or MINUSTAH personnel. What happened?
