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Providing healthcare under the threat of gang-violence: a survey of Haitian healthcare providers

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Abstract

In addition to having some of the worst health outcomes in the region, Haiti faces a political and economic crisis. The most recent humanitarian crisis includes an increase in homicides and kidnappings in the capital Port-au-Prince. This study is a cross-sectional, mixed methods online survey of health workers and medical students in Port-au-Prince from May 20 – September 15, 2023. It provides evidence of the kidnapping risk healthcare workers face and shares the perspective of a medical community operating in a challenging context to provide a continuity of care under the threat of violence. The survey of Haitian health workers and students show a significant risk of kidnapping with 44% of respondents reporting that they had a colleague kidnapped in the previous 2 years. 5 of the 249 respondents had been kidnapped and all were young, female health workers. 74% of health workers and students surveyed reported they plan to continue their profession abroad. Although teletraining was viewed as a positive opportunity to continue training cadres of medical professionals, health workers shared numerous limitations present for the expansion of telemedicine in the Haitian context. In addition to describing the experience of the Haitian healthcare professional during this crisis and documenting barriers to teletraining and telemedicine, this survey documents design considerations for mobile phone surveys with healthcare providers working in areas affected by conflict.

Keywords Healthcare workers, Haiti, Conflict, Telemedicine, Kidnapping

Background

Haiti is experiencing a humanitarian crisis and an increase in insecurity. According to the United Nations Security Council, Haiti faces a political and economic crisis, widespread food insecurity and growing violence due to gang activity [1]. In early 2024, much of the capital is estimated to be under control of non-state actors. The impact of this violence is widespread, exacerbating issues of food security, healthcare, and school access [1, 2]. More than half the population (5.5 million) is estimated in need of humanitarian assistance [3]. As of February 2024, 314,000 people are estimated to be internally displaced persons (IDPs) country-wide [3]. Gangs have perpetrated numerous human rights abuses including

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homicides, sexual violence and kidnapping in the West and Artibonite Departments [2]. From 1 July – 30 September 2023, Haiti reported 701 victims of abductions and 1,239 homicides [4]. A 2024 report by the UN cited a 119% increase in homicides in 2023 from 2022, and an 83% increase in kidnapping [5].

Although all aspects of society are impacted by the widespread violence in the capital, there is evidence that health workers are increasingly targets of violence. According to the Haitian Medical Association, 20 doctors had been kidnapped in 2022 [6]. In Haiti, there are an estimated 1.4 physicians and 1.8 nurses per 10,000 people in the public sector which is lowest nurse to population ratio in the Americas [7]. In March 2022, following several kidnapping incidents of health workers linked to the recent insecurity present in Port-au-Prince, health workers went on strike, resulting in the closures of facilities across the city [8, 9].

Existing evidence does not quantify the magnitude of healthcare facility closures; however, numerous hospitals have announced closures due to violence and challenges to operate [10]. Telemedicine is considered as one of the alternatives used to deliver health-care services to the vulnerable population in conflict-affected settings [11]. The World Health Organization (WHO) recently published a guide for telemedicine programs, recognizing its potential to expand access to services and provide a continuity of care [12, 13]. Teletraining is an opportunity to provide continuing education for medical students and health professionals principally in areas affected by gang-violence and armed conflict. This mixed-method, cross-sectional study aimed to understand the security risk and interruption to health services caused by the violence and understand digital access to inform investments in telemedicine and teletraining.

Methods

To improve evidence on the challenges facing Haitian healthcare workers in Port-au-Prince, a cross-sectional, online survey with a snowball sampling approach through WhatsApp, supplemented by online outreach targeted to medical professionals, nursing and medical

students working or residing in Port-au-Prince, Haiti was deployed from May 20–15 September 2023. Table 1 outlines the research questions and outcome measures for the research with Haitian healthcare providers and students. The survey was disseminated via WhatsApp and other media platforms to health workers, remotely to ensure the safety of participants and research staff.

Inclusion and exclusion criteria for participants

The inclusion criteria for the study included consenting male and female participants aged 18 years or older who were also medical professionals or medical students and reside or work in Port-au-Prince, Haiti.

Participants recruitment

The method for recruitment was multi-fold and remote due to challenges of security and detailed in the supplementary materials. As WhatsApp is a commonly used platform in Haiti, a survey platform which was phone-friendly was prioritized. To socialize and promote the survey, a video was developed regarding the background and how to take the survey. This was shared along with promotion materials in French and Haitian Creole across Instagram and Facebook. A Haitian nurse based in Port-au-Prince was also employed to operate the helpline in case of questions and share the survey with medical and nursing training institutions.

Data collection method and procedures

Following significant user testing on the most common smartphone type in Haiti (Android) and a review of data privacy options, JotForm was chosen as the most user-friendly and secure platform for an online survey to be performed on a mobile phone, with limited data connectivity [14]. An additional subscription to Jotform was purchased to ensure GDPR compliance, with data stored on servers in Europe [15]. Following a pilot in May 2024, the survey was opened and closed September 2024. The survey was offered in Creole and French in links which were shared across all the above platforms.

Table 1 Research questions, objectives and outcome measures for the online survey

	Research Question	Objectives	Outcome Measures
Primary	1. What is the real and perceived risk of violence to health workers in Port-au-Prince, including incidents of kidnapping? 2. What is the extent of medical facility closures in Port-au-Prince due to insecurity?	Understand security risk and interruption to health services caused by insecurity	Responses on risk of kidnapping, kidnapping incidents, health facility closures
Secondary	3. What is the capacity for telemedicine and teletraining by medical professionals and students in Port-au-Prince?	Needs assessment for required components of telemedicine and teletraining to inform investments in Port-au-Prince	Responses on ownership and access to devices/WiFi/Teleconferencing and power.
Tertiary	4. Is WhatsApp a viable health survey platform for health professionals in a low-income setting?	Test method of a WhatsApp survey in low-income country	Recruitment, participation (consent), retention during survey

Table 2 Bias, limitations and mitigations for Port-Au-Prince healthcare workers survey

Type of bias	Source	Mitigation
Selection bias	No access to a smart phone	None
	No access to WhatsApp	A web version made available and shared in alternative communications
	The link is not shared widely through existing WhatsApp groups	Advertisements made available at other locations, online
Information bias	No interest in the survey/participants do not think the survey will impact their well-being or interests	Explanations of the purpose of the survey and consultations with key stakeholders and via communications to drive buy-in from participants
	Design of questions and language	Questionnaire offered in Haitian Creole and French for the comfort/preference of the participants. Questionnaire piloted and adjusted.
Recall bias	Participants are asked to respond regarding incidents in the past	Timeframe of 2 months was considered to reduce recall bias.

Data analysis

A concurrent mixed methods analysis was used for this study [16]. The qualitative open questions were shared for translation from Creole and French to English. This was completed by a Haitian social worker with understanding of the content. These questions were then analyzed in combined form by NVIVO using a thematic approach [17, 18]. A coding framework, available in the supplementary materials, was developed through an iterative process. The quantitative data was combined and translated to English. R was used to perform the analysis of the quantitative data [19].

Ethical considerations

The aspects of patient and public involvement in this research were critical due to the care required to research with a vulnerable population on a potentially sensitive topic and through a novel research platform. A research advisory committee (RAC) was established with the support of the Centre for Haitian Studies and included Haitian researchers, anthropologists, medical doctors, a nurse as well as physicians with extensive experience collaborating with Haitian medical institutions. The RAC co-designed the questionnaire, approved translations, the study protocol and supported the development of the communications materials for the study.

Ethics considerations in design of the survey included data privacy compliance to GDPR, framing of sensitive questions, informed and voluntary participation and multiple sources of information on the survey purpose including a helpline. There was a risk that answering questions about personal risk, particularly about kidnapping will cause discomfort, especially in respondents who experienced a kidnapping. To reduce this risk, a Haitian social worker was recruited to support the wording and framing of the question and the wording of the participant consent to encourage participants to decline if they are uncomfortable to respond given the sensitive nature of the topic. Participants were informed via the consent process that they may stop the survey at any time and a

Table 3 Age distribution of participants

Age range	Count
18–27	113
28–37	106
38–47	15
48–57	1
58+	4
Missing	10
Total	249

website was developed to provide additional information. No incentives were provided.

Risks

Across aspects of the study design, the known limitations for mobile phone surveys were considered and where possible, mitigated. There are summarized in Table 2.

Results

Following the closure of data collection on September 15th, the data from the French and Creole questionnaires was exported from JotForm. There were 296 responses (193 French, 103 Creole). Following data cleaning and after the identification of duplicates and ineligible respondents, 249 responses (168 French and 81 Creole) were analyzed. Although the IP address was hidden from the data in JotForm, a map of the origin of responses confirmed that the surveys were completed in Haiti (93% French, 97% Creole) with the remaining responses from known areas for Haitian migration including Canada, Chile and the United States. 152 of the respondents were female and 97 were male. The age range was 20–79 with ranges reflected in Table 3. Table 4 share the breakdown of professions responding to the survey.

The majority of respondents responded they received the survey via the website (127), followed by other (67), WhatsApp (30), Facebook [20], health facility poster [3] and Instagram [1].

Following the analysis of quantitative and qualitative data in line with the research questions, six key themes

Table 4 Profession distribution of participants

Profession	Count
Medical Student	91
Nurse	67
Doctor	69
Auxiliary Staff	12
Nursing Student	4
Dentist	3
Epidemiologist	1
Pharmacy Student	1
Physiotherapist	1
Total	249

emerged; [1] medical professionals express living in a state of constant fear of being kidnapped, [2] interruptions to healthcare provision as a result of insecurity, [3] interruptions in medical and nursing training, [4] health worker reactions to the risk of violence, [5] salary and payment and [5] opportunities and challenges to telemedicine and telehealth.

Medical professionals express living in a state of constant fear of being kidnapped

98% (244) respondents are concerned for their safety as a health worker or medical or nursing student in Port-au-Prince. 70% (173) respondents said medical professionals are at heightened risk of being kidnapped. Respondents explained that although few people in Haiti are exempt from a risk of kidnapping, medical professionals are especially targeted as they are perceived as wealthy and gangs and kidnappers may target them to provide medical care.

The reason health professionals are at a higher risk, if a kidnapper knows that you are a doctor or a nurse, they will kidnap you to ask you for money or kidnap you so you can give them care when they get shot during confrontations with the police. – Female, Nurse, 33 years old.

When I am in Port-au-Prince, I do not let people know that I am a medical doctor because they see doctors as people who make a lot of money. Therefore, we are automatically targeted by the kidnappers. – Female, Doctor, 26 years old.

44% (109) of respondents had a colleague in the medical field kidnapped in the last 2 years. 61% (152) said they were afraid of being kidnapped. In the qualitative responses, health workers report a constant fear and of living under threat from violence and kidnapping.

They've kidnapped people near the hospital I work at several times, even in front of the gate...They've kidnapped many of my colleagues already. More than

Table 5 Demographics of kidnapped health workers

Profession	Age	Gender	Type of Transport
Nurse	27	Female	Public transport; Taxi, Motorcycle
Doctor	37	Female	Public transport; Private Vehicle
Surgeon	28	Female	Private vehicle; Motorcycle
Nurse	27	Female	Public transport
Nurse	33	Female	Public Transport

15, that's what scares me the most. People always think that doctors have a lot of money, that's why I think that we are at a higher risk to be taken and the bandits sometimes need people to give them care when they are hurt because they cannot walk into a hospital so they don't get arrested. – Female, Doctor, 32 years old.

I am afraid of being kidnapped and we never know when something will happen during our days or hours of work. When we go out, we don't know if we will ever make it back home. Our families are always worrying. – Female, Nurse, 29 years old.

Of the respondents, 5 respondents said they had been kidnapped in the last two years. As outlined in Table 5 all were female nurses or doctors between the ages of 27 and 37.

The survey did not measure the mental health impact of the violence on the healthcare workers and students. However, through the qualitative responses, respondents shared the negative impact on their well-being.

It's a really traumatizing reality, you are a refugee in your own country. It like you are afraid of yourself, you are afraid of your own home's reality. – Female, Medical Student, 26 years old.

I sit home all day but when the night comes, I get really stressed because I am afraid that bandits will invade my house in the middle of the night because I hear a lot of gunshots at night. – Female, Nurse, 27 years old.

We have no one to protect us. - male, Medical Student, 31 years old

I am here but I am not living, I am surviving. I see me dreams shattered. I am almost a depressed person. – Female, Medical Student, 34 years old.

Interruptions to healthcare provision as a result of insecurity

The reason for medical facility closure in Port-au-Prince can include violence. The questionnaire asked health

workers, “In the last two months how often have you stayed home from work due to insecurity?” The results are summarized in Table 6.

Interruptions in medical and nursing student training

Given medical and nursing school is free for state education, only 8% [8] of students reported not being able to continue education due to the inability to pay fees. Students are impacted by the violence and studies are disrupted. They reported the violence also causes issues of distress and an inability to concentrate on school work.

I am afraid to walk to school, I feel like every day is my last day. - Female, Medical Student, 23 years old.

My environment is bad, there are always gunshots, I am always stressed. Especially when I hear that there's going to be some problems. This results in me not being able to concentrate on my studies. - Female, Medical Student, 25 years old.

Table 7 provides reasons for the interruption for study for students in medical and nursing school.

Health worker reactions to the risk of violence

Health workers shared their changes in behavior, such as disguising their work as a health worker and staying home as they are concerned for both kidnapping, costs and payments to gangs made to cross to different areas of the city. One question asked health workers and students about their future and this is summarized in Table 8. The majority plan to continue their work and training outside of Haiti.

Salary and payment

Respondents were asked about the timing of salaries and if they were paid. In the open question related to this theme, health workers reported that salaries were not sufficient for the cost of living and inflation. 50% of health professionals were paid late and only 32% professionals paid on time.

The salary is not adapted to the reality of the country. It's like experiencing disguised unemployment. - Female, Nurse, 27 years old.

We risk our lives to go to work but we are in reality wasting our time because our salaries do not meet our needs at all. - Female, Nurse, 33 years old.

Table 6 Health workers in Port-Au-Prince frequently stayed home due to insecurity

Survey Response	No. of Responses	Percentage
Did not stay home due to insecurity	26	10%
Stayed home 1–3 times	68	27%
Stayed home 4–5 times	29	23%
Stayed home more than 5 times.	126	51%
Number of Survey Respondents	249	

Table 7 Cause of training interruption for students in health education in Port-au-Prince, Haiti

Survey Response	No. of Responses	Percentage
My training is frequently interrupted due to insecurity	64	67%
I can afford the medical fees	13	14%
I have stopped my training because I do not have the fees	8	8%
My training is frequently interrupted due to staffing	7	7%
Number of Medical, Nursing, and Pharmacy Student Survey Respondents	96	

Table 8 Career and training prospects by Haitian healthcare workers and students

Survey Response	No. of Responses	Percentage
I plan to continue my training and professional career abroad	184	72%
I plan to continue my training and professional career in Haiti	72	29%
I plan to leave the medical sector and have a different profession	13	5%
Number of Eligible Survey Respondents	249	

Opportunities and challenge to telemedicine and telehealth

The study asked questions to understand the feasibility and perceptions of both telemedicine and teletraining. When asked if telemedicine and teletraining were possible options in Haiti, 222 of 249 respondents said teletraining is possible and only 94 of 249 respondents said telemedicine is possible. The qualitative response shared additional insights.

Telemedicine as an innovation in the Haitian medical science would be very important but the basic problems such as lack of electricity and unstable internet in the country. It would be very important but these problems have to be solved first. - Female, Medical Student, 26 years old.

Telemedicine will be a big step in health in Haiti, but it will require more energy and internet. - Male, Doctor, 26 years old.

Regarding telehealth, we would first have to educate the people. – Female, Medical Student, 27 years old.

There were also positives on telemedicine and evidence it is used in Haiti, already.

This would be a very good initiative and above all informative. What could change the way that medical care is administered in Haiti. – Female, Nurse, 30 years old.

Telemedicine is used in our institution. – male, Doctor, 77 years old

Open questions on teletraining initiatives also shared positive and negatives for the potential approach. Teletraining negatives were similar with the main barriers being consistent internet and sources of energy.

For that to be possible in Haiti, each student would need to have access to internet and a source of energy, it's something that is very difficult for now because we have electrical problems in Haiti and the internet plans are really expensive. A student will not have the means to activate a plan every day to follow online classes. – Male, Medical Student, 23 years old.

Access to high-speed internet is not accessible to everyone and the existing providers are not even able to provide it adequately. Therefore, for telehealth and teletraining, we are not ready yet. – Male, Doctor, 36 years old.

Students and medical professionals were overwhelmingly positive on the teletraining opportunities due to the need for training, continuation for existing students, reduction in risk of travel during insecurity.

I appreciate the idea because it will be a new tool that will allow everyone to benefit, either patients or doctors or medical students! Sometimes there are gunshots, roads are blocked, in that way, teletraining will be very important for everyone to continue their learning. – Male, Medical Student, 28 years old.

Yes, it would be useful because sometimes you spend several weeks home and all classes stop. If we had teletraining we would be able to continue our training while being home. – Female, Medical Doctor, 32 years old.

My dream is completely ruined because of the inse-

Table 9 Types of devices available to respondents

Survey Response	Number of Responses	Percentage
Android	203	82%
Laptop	159	64%
iPhone	67	27%
Desktop	31	12%
None	4	2%
Number of Eligible Survey Respondents	249	

Table 10 Access to data and WiFi by respondents

Survey Response	Number of Responses	Percentage
Phone Data (Home)	204	82%
WiFi (Work)	71	29%
WiFi (Home)	51	21%
Phone Data (Work)	48	19%
None	11	4%
Number of Eligible Survey Respondents	249	

curity that reigns in the capital, investing more in teletraining in Haiti is extremely urgent. – Male, Medical Student, 24 years old.

Investing in teletraining and telehealth would be an excellent idea. It will make it easier for participants to be less at risk regarding the insecurity and will facilitate our daily activities and allow to save money. – Male, Laboratory Technician, unknown years old.

To inform the design of initiatives, information the types of devices and WiFi or data connection available to health workers and students were collected and available in Tables 9 and 10. Multiple responses were permitted.

Discussion

According to the International Committee of the Red Cross, in situations of international and non-international conflict, “personnel engaging in medical tasks must always be respected and protected, unless they commit, outside of their humanitarian function, acts that are harmful to the enemy.” [21] This survey contributes to evidence on the nature of attacks on healthcare workers. The number of responses to this survey from a small community working in a high demand occupation and living in a city with significant insecurity show the relevance of the research to the researched population and provides an opportunity for them to be heard. The mixed methods approach provided a richness in evidence which would not have been available with either of the approach alone. The qualitative data expanded on the reasons behind kidnapping, such as the additional risk to health

workers for kidnapping as they are not only kidnapped for money but to provide medical care to gang members [22].

Medical professionals in Haiti are at high risk of kidnapping

In Port-au-Prince, kidnapping and violence are common strategies used by the gangs to terrorize the population. The findings of our study indicates that health professional workers have a risk of kidnapping and in a targeted manner. All participants who were kidnapped are female. Health workers report having been kidnapped with intention to provide medical care to gang members. Direct consequences on health workers were not a focus of the study, however, some participants revealed challenges in their mental health resulting of the situation. A recent systematic review highlights relevant studies to violence on Health care workers from 2003 to 2021 in five countries with armed conflict. The study showed that violence has a strong association with the rapidly deteriorating mental health of the health care workers in conflict-based setting across the World [23].

Insecurity causes interruption to healthcare delivery and medical training

Medical facilities closures are common in areas in gang control. People residing in nearby areas may not be able to access life-saving treatment. Even when institutions remain open, they face lack of staff frequently because the challenges in security and transport. The data showed how often healthcare workers stayed home due to insecurity with the majority reporting more than five times or more in two months. The impact of this insecurity results in low- quality healthcare provision due to shortage of health workers and reduced access to medical supplies.

Insecurity impact on health workers livelihoods

In addition to the risk of physical harm, there is an economic impact of this armed conflict on health care workers due to the rising cost of living, late or absent payments from health facilities and in some cases, the need to pay large sums of money for kidnapping ransoms. Estimates of ransoms paid for kidnapping release in Haiti may be hundreds of thousands of dollars [24]. The study results highlighted the economic precariousness experienced by health care workers. More than 50% of healthcare workers had late paychecks and all said that their salary was insufficient compared to the actual inflation and cost of living. In case of kidnapping, families may sell their house, borrow money, and ask family and friends to contribute to pay the ransom.

Faced with physical and financial risks, many health care workers have decided to continue their careers outside of the country. The data shows that 74% of the

respondents intend to leave Haiti. In the last 10 years, Haiti has faced a brain drain of the medical and nursing professionals. The loss of these medical workers will worsen the healthcare crisis in the country because of existing low ratio of medical workers. According to the UN World Data there are about 1.4 doctors per 10,000 inhabitants and the migration of these workers is motivated by better quality of life, personal safety and professional development [7].

Challenges and opportunities for the introduction of telemedicine and teletraining in conflict-affected areas of Haiti

Considering challenges in accessing medical facilities due to violence, telemedicine is considered an opportunity for the continuity of health care provision. The capacity of telemedicine opportunities in Haiti was recently outlined by Berthaud, with a framework covering technical, operational, human, procedural and financial areas [25]. In the results of this survey, telemedicine was considered challenging due to lack of electricity, power and concerns that the population would not understand the modality due to low education levels. The barriers documented by Berthaud, were similar to those shared through this study via the Haitian health professionals [25].

However, the potential for teletraining was welcomed by both medical professionals and medical students. 66% of students in the study had training frequently interrupted due to insecurity in Port-au-Prince, which indicated that teletraining can be an opportunity for continuity. The data shows opportunities to provide teletraining as most respondents have access to a device and a connection with the bias that the respondents were able to access the online survey and are therefore already connected. However, the evidence gathered through the survey can provide insights on how teletraining initiatives could be tailored to the context for most users such as designing programs which can operate on a data connection and an Android device. Barriers related to lack of electricity, poor access to high-speed internet should be considered.

Use of mobile platforms for research with health workers residing in conflict-affected areas

The use of a remote, digital health survey, particularly with vulnerable population, is a novel approach with opportunities to overcome research barriers and specific limitations. The use of WhatsApp and web surveys are more common platforms for research in high-income settings, including with health workers [26]. There are a limited number of WhatsApp surveys of health workers in middle-income countries such as the study on the COVID-19 cross-sectional study on healthcare workers in Brazil [27]. A recent Scoping Review by Manji et al., outlines the potential of WhatsApp as a research method

for health systems in low- and middle-income countries, while highlighting areas of concerns in methodology, which are considered in this research, including data storage, consent and recruitment methods [26]. Although electronic medical records are not common in Haiti and computer use in hospitals not widespread, WhatsApp is a commonly used application among Haitian medical professionals and has even been cited as an opportunity for teaching, collaboration and telemedicine [28]. However, in this context, the dissemination of the online links via social media and e-mail was the source of survey for the majority of respondents, not WhatsApp. The diverse recruitment methods provided insights into which methods worked for different segments of the population. On average, the French survey took approximately 7 min and the Creole version 5 min, showing a reduced time burden on respondents and ease of use in the design of the platform. In conclusion, the design of a safe, usable and well-design and short questionnaire was successful, however, in this context, WhatsApp alone would have yielded a much smaller sample of respondents.

Limitations

The limitations of the survey included the bias for non-participation. No phone or data access is a known bias in web and phone surveys and low-income contexts have additional challenges such as the ability to charge phones and interruption in data availability. These are also known challenges in the Haitian context. This was considered an appropriate weakness in the design in contrast to a face-to-face survey which may have endangered the enumerators or health workers.

Conclusions

Haitian healthcare workers and students face significant risk of kidnapping due to the current instability and the profession is impacted due to the concern of health workers and students for their own safety. Further, the significant interruption in training for medical and nursing students risks the future of the healthcare sector in Haiti. The majority plan to continue their profession outside the country. Telemedicine may not be feasible due to the absence of key components; however, teletraining is considered feasible by most respondents and could mitigate challenges in the interruption of training for current students.

Additional research is needed to further understand reasons for non-participation in digital surveys in low-income contexts and to provide further evidence on the frequency and closure of facilities due to the ongoing violence. Given the uniformity of the respondents who have been kidnapped, additional data on the risk factors among health workers for kidnapping could guide interventions to reduce risk of harm. Further insights into

the best platforms to disseminate mobile-friendly web-surveys in specific contexts would improve the design of future surveys. The close collaboration with the Research Advisory Committee was critical in this context and a best practice to improve the research design, including building in additional communications component and ensuring that communications on the survey were not made at sensitive moments, such as the natural disasters which impacted the Port-au-Prince in June 2023.

The survey, executed in a challenging context, provides lessons learned for methods in the design of remote surveys for populations in conflict and provides evidence for the use of mixed methods approaches with understudied issues and populations. This survey shared the perspectives of Haitian healthcare professionals and students residing in Port-au-Prince, Haiti in a population largely under-researched due to issues of access and security.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13031-024-00612-6>.

Supplementary Material 1

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Author contributions

Rachel Victoria Belt developed the study protocol, questionnaire, methods, survey tools and performed the analysis of the study. Dr. Nadège Jacques supported the development of the questionnaire, reviewed of translations for accuracy and contributed to the writing of the manuscript. MP, KR and LG supported the study design and provided guidance and comments on the manuscript.

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Data availability

Data will be made available on written request.

Declarations

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Ethics approval and consent to participate

The Oxford Tropical Medicine Ethics Committee (OxTREC) reviewed and approved the study in March 2023. Local approval by a Haitian committee was not required due to the remote nature of the research, however, a letter and the accompanying protocol and questionnaire was shared with the Ministry of Population and Health (MSPP) of the Government of Haiti for non-objection and information.

Consent for publication

No identifiable data was included.

Competing interests

The authors declare no competing interests.

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