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# ‘When you welcome well, you vaccinate well’: a qualitative study on improving vaccination coverage in urban settings in Conakry, Republic of Guinea

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**Background:** Recurrent measles outbreaks followed by mass vaccination campaigns (MVCs) occur in urban settings in sub-Saharan countries. An understanding of the reasons for this is needed to improve future vaccination strategies. The 2017 measles outbreak in Guinea provided an opportunity to qualitatively explore suboptimal vaccination coverage within an MVC among participants through their perceptions, experiences and challenges.

**Methods:** We conducted focus group discussions with caregivers (n=68) and key informant interviews (n=13) with health professionals and religious and community leaders in Conakry. Data were audio-recorded, transcribed verbatim from Susu and French, coded and thematically analysed.

**Results:** Vaccinations were widely regarded positively and their preventive benefits noted. Vaccine side effects and the subsequent cost of treatment were commonly reported concerns, with further knowledge requested. Community health workers (CHWs) play a pivotal role in MVCs. Caregivers suggested recruiting CHWs from local neighbourhoods and improving their attitude, knowledge and skills to provide information about vaccinations. Lack of trust in vaccines, CHWs and the healthcare system, particularly after the 2014–2016 Ebola epidemic, were also reported.

**Conclusions:** Improving caregivers’ knowledge of vaccines, potential side effects and their management are essential to increase MVC coverage in urban settings. Strengthening CHWs’ capacities and appropriate recruitment are key to improving trust through a community involvement approach.

**Keywords:** community health workers, mass vaccination, measles, qualitative research, vaccination, vaccination refusal

## Introduction

In humanitarian settings, evidence supports measles immunization as an early priority.<sup>1</sup> Mass vaccination campaigns (MVCs) in response to measles outbreaks are regularly conducted.<sup>2</sup> Efforts have been made to standardize MVCs and monitor them<sup>3</sup> through subsequent vaccination coverage surveys.<sup>4–6</sup> These surveys have identified lower coverage associated with target community characteristics,<sup>7</sup> organization of the MVC and caregivers’ practices and knowledge.<sup>8</sup> In urban settings, lower coverage is

linked with high population density, poor social access, health delivery aspects and inadequate demand among populations.<sup>9</sup> However, surveys in urban settings mainly provide quantitative information for routine vaccination and, to better understand why caregivers do not protect their children against measles during MVCs, qualitative methods have subsequently been suggested for coverage surveys.<sup>10</sup>

Recurrent measles epidemics followed by MVCs have occurred in Guinea from 2014. In February 2017, another epidemic was declared, which yielded 3991 confirmed cases nationwide. In

April 2017, Médecins Sans Frontières (MSF) supported the Ministry of Health in conducting an MVC in Conakry with 95% coverage. Despite epidemic response interventions, the reasons for these recurrent outbreaks are not well understood. During the MVC, the main reasons for non-vaccination were lack of knowledge (51%) followed by lack of opportunity (42%).<sup>11</sup> A more detailed, qualitative analysis of these reasons would be useful in adapting the strategies to improve coverage.

Our objective was to understand the reasons related to sub-optimal vaccine uptake in urban and peri-urban populations of Conakry, Guinea. The specific objectives were to explore caregivers', health professionals' and community leaders' perceptions of vaccines and to understand their experiences and challenges.

## Materials and methods

### Study design

We conducted a descriptive, qualitative study including focus group discussions (FGDs) and key informant interviews in two communes of Conakry, Guinea, in September 2018.

### Study setting

The study was carried out in two communes in Conakry, Matoto and Matam (Figure 1). They were selected for their differences in

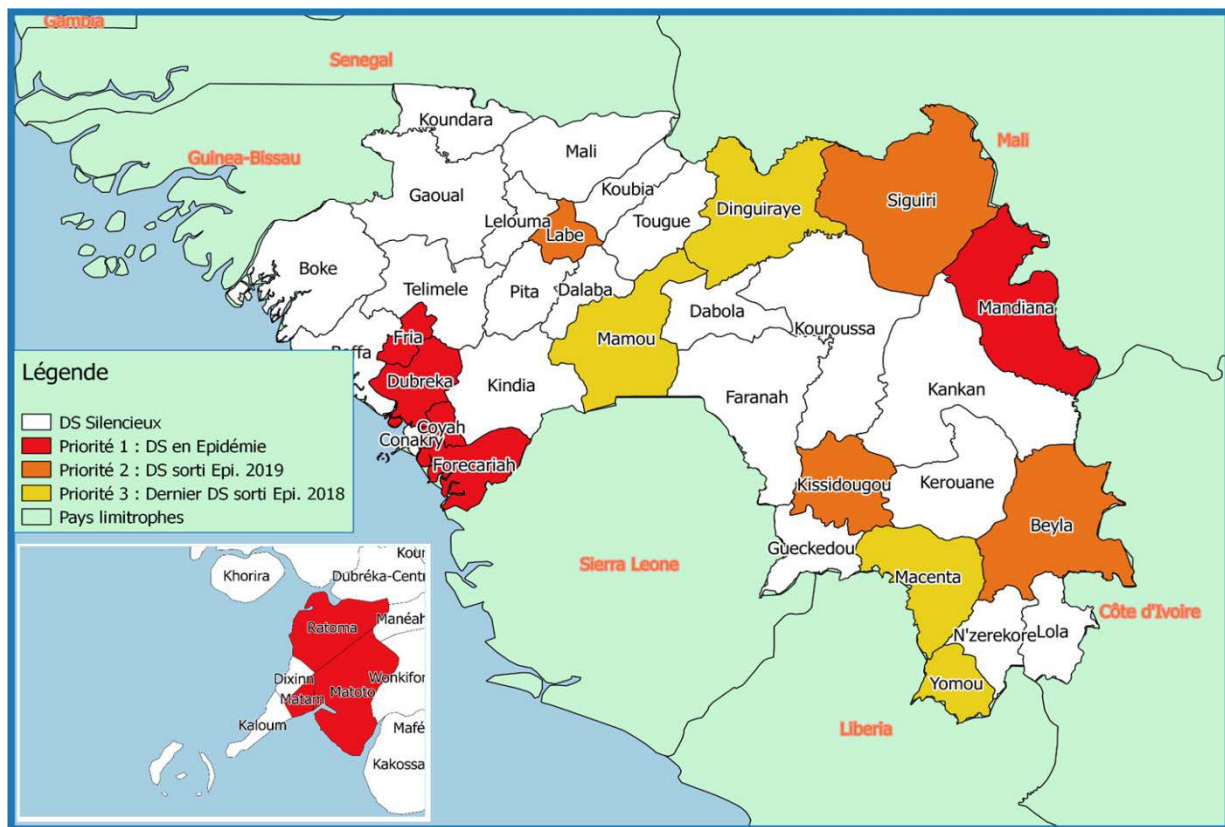
urbanization levels and for being the most affected in the last two measles epidemics. Matoto (918 175 inhabitants) is a peri-urban commune in which 224 900 children aged between 6 mo and 9 y were targeted, and Matam (197 525 inhabitants) is urban with a target of 48 200 children in the MVC.

### Study population

Our study population consisted of caregivers and key informants from the two communes. We included caregivers whose children were of target age for the measles MVC in April 2017 and who self-reported the vaccination status of their children. Male and female caregivers aged  $\geq 18$  y were invited to participate. Key informants included religious and community leaders, health professionals and community health workers (CHWs) involved in the preparation and implementation of the April 2017 MVC. CHWs in Guinea are community members who provide basic health and medical care to their community. During MVCs, they deliver sensitisation messages and logistical details about vaccination.

### Sampling and recruitment

Purposive sampling was used to recruit participants for FGDs and interviews. After consultations with commune leaders, the research assistant and principal investigator (PI) approached



**Figure 1.** Geographical distribution of prefectures prioritized for the implementation of the accelerated control plan for measles outbreaks in Guinea, 2019–2020.

caregivers at community meeting points in each commune to explain the study and invite them to participate. Care was taken to include caregivers of both vaccinated and unvaccinated children. This was verified verbally, but no proof of vaccination was requested. Originally, it had been intended to conduct FGDs where caregivers were separated on the basis of self-reported vaccination status of their children, but this was not feasible. Some participants were only available at particular times, while others originally reported their children to have one vaccination status, but during the FGDs reported the opposite or had misunderstood to which vaccination the discussion referred.

Key informants were identified from the list of staff involved in the MVC in 2017. They were contacted by telephone and invited for interview.

### Data collection

FGDs were held in community venues and private venues easily accessible from the recruitment sites. Key informants were interviewed in offices, clinics, religious structures and the residences of community representatives.

The FGDs were conducted by a male Guinean research assistant with support from the female PI and another female coinvestigator. The research assistant had previous research experience in this setting and was provided with qualitative research training prior to the commencement of data collection. All FGDs were carried out in the local language of Susu. Key informant interviews were carried out in French by the research assistant and two coinvestigators. FGDs and interview guides with prompts and open-ended questions were developed, tested and adapted accordingly. The guides were translated from French into Susu, then translated back for verification. All FGDs and interviews were audio-recorded, with written informed consent from participants.

Data collection continued until saturation was reached, when no new emerging themes were noted. FGDs lasted 33 min on average while key informant interviews lasted 29 min.

At the end of each FGD or key informant interview, the research assistant, PI and coinvestigator discussed emerging themes, verified their notes and identified any gaps to address in subsequent data collection. Based on this verification, changes were made to the FGD guides during the data collection process.

### Data analysis

Audio recordings were translated from Susu (when required) and transcribed into French by the research assistant. All transcripts were read by the PI and two coinvestigators. Inductive coding was conducted by the PI using NVivo QSR International version 11 software and reviewed by the coinvestigators. Thematic analysis was used.<sup>12</sup> Themes were discussed between the PI, research assistant and two coinvestigators, and a consensus was reached. The main themes are presented in the Results section.

## Results

A total of nine FGDs with 68 caregivers and 13 key informant interviews were conducted. Caregivers were mostly female

(48/68) and the key informants were mostly male (10/13). The mean age of FGD participants was 29 y in Matam and 39 y in Matoto. The majority of the FGD participants were Muslim.

Demographic characteristics and the professional role of the participants are described for FGD participants in Table 1 and for key informants in Table 2.

We found no major differences between the two communes. We identified two main themes based on the perspectives and experiences of primary caregivers, religious leaders and health professionals targeted or involved in the previous MVC in Conakry: (1) knowledge of vaccines and their side effects and (2) community involvement during vaccination campaigns.

#### 1. Knowledge of vaccines

- a. Perceived benefits of vaccination: *'If you get vaccinated, it will be difficult for you to get measles.'*

The majority of caregivers were positive about the benefits of vaccines, believing that there were fewer epidemics as a result of vaccine uptake and increased protection provided against specific diseases. Some divergent perspectives on the perceived benefit of vaccination were described by a small number of caregivers, in which vaccines were described as causing or exacerbating disease.

*'There are no other effective methods to treat measles besides vaccination.'* (40-y-old male caregiver of a vaccinated child)

*'The vaccine will activate all the diseases inside the child's body.'* (30-y-old female caregiver of an unvaccinated child)

Key informants unanimously supported the benefits of vaccines as a preventive mechanism against infectious diseases for both children and adults. Imams described how disease prevention is aligned to the teachings of the Quran and detailed their role in translating this message to the communities with whom they work. Key informants also clearly stated the efficacy of vaccines.

- b. Request for further knowledge: *'I would like to know which illness this vaccine is for.'*

Several caregivers expressed concerns about their insufficient knowledge of vaccines, detailing that they wanted to better understand which vaccine was being offered and which disease it prevented. They believed improved knowledge could improve uptake in future campaigns.

*'There is [a] need to differentiate the diseases for which we vaccinate our children, this will empower us to vaccinate, but if caregivers don't know why to vaccinate, they won't accept.'* (32-y-old female caregiver of a vaccinated child)

Caregivers and key informants had differing views on knowledge gaps. While caregivers expressed interest and willingness to better understand vaccinations, health professionals cited that 'religion' and 'illiteracy' were reasons for misunderstandings about vaccination within their communities.

Several misperceptions about vaccinations, including sterility and political motivations for vaccinations, were assumed to be attributed to low literacy levels by key informants. This was in

**Table 1.** Demographic characteristics of focus group discussion (FGD) participants, Conakry 2018

Commune	FGD number	Total participants	Gender	Age range, y	Vaccination status of their children*
Matam	1	7	4 females 3 males	19–45	6 vaccinated 1 not vaccinated
	2	5	2 females 3 males	25–29	1 vaccinated 4 not vaccinated
	3	10	7 females 3 males	18–50	3 vaccinated 7 not vaccinated
	4	6	6 females	20–32	2 vaccinated 4 not vaccinated
	5	8	7 females 1 male	20–60	8 vaccinated
Matoto	1	8	7 females 1 male	18–62	5 vaccinated 3 not vaccinated
	2	8	1 female 7 males	20–57	6 vaccinated 2 not vaccinated
	3	8	7 females 1 male	20–40	8 vaccinated
	4	8	7 females 1 male	18–54	8 vaccinated
Total	9 FGD	68	48 females 20 males	18–62	47 vaccinated 21 not vaccinated

\*Vaccination information was not always accurate on which campaign it referred to, since the National Polio days occurred at the time of the interviews.

**Table 2.** Demographic characteristics of participants in the key informant interviews, Conakry 2018

Commune	Key informant number	Gender	Job profile or role in the community
Matam	1	Female	Medical doctor
	2	Male	Health manager
	3	Male	Imam
	4	Female	Health agent
	5	Male	Health promoter
	6	Male	Health agent
Matoto	7	Female	Health supervisor in the community
	8	Male	Health manager
	9	Male	Head of District
	10	Male	Head of Imams
	11	Male	Medical doctor
	12	Male	Health agent
	13	Male	Head of Neighbourhood

direct contrast to caregivers, who identified gaps in their own knowledge and requested further information.

*‘There is a lot of illiteracy here, 80%. CHWs need to explain well, there are people who say that if they vaccinate, their child will be sick, others say that if their child is a girl and they vaccinate her, she will be sterile.’* (Medical doctor, female)

c. Gaps in knowledge and limited trust in vaccines: *‘Vaccination makes children sick; if you have no means for treatment it will be difficult.’*

Three key knowledge gaps emerged that limited caregivers’ trust in vaccines: (1) side effects of vaccines, (2) associated costs of treating the side effects and (3) negative

perceptions of the health system, particularly in a post-Ebola period.

Concerns about side effects of vaccinations were widely reported within the community-based FGDs. Side effects caused people to be afraid, thereby discouraging vaccination.

*'They will be sick [after being vaccinated], this is why mothers run away'* (45-y-old female caregiver of an unvaccinated child)

*'People could understand if a side effect occurs because it has been explained to them, therefore they will not be frustrated.'* (23-y-old male caregiver of an unvaccinated child)

The importance of ensuring that CHWs had enough knowledge and proficiency to explain to local community members about the potential side effects of vaccines was emphasized by key informants.

*'There is [a] need for the health worker to know the side effects and to share them when you are going to vaccinate. There is [a] need to share this knowledge, if you don't, it will not work.'* (Medical doctor, male)

Upfront payment for vaccinations and the associated costs with managing vaccine side effects were reported. Caregivers were particularly concerned about how these side effects would be managed and repeatedly referred to the affordability of the potential treatment.

*'If you take your child to the hospital, saying that [she] had been vaccinated they will prescribe drugs that you cannot afford. Parents don't have 100 Fr [1 cent US\$] to pay for drugs.'* (32-y-old female caregiver of an unvaccinated child)

Fear was mentioned by both caregivers and health professionals as a challenge to vaccination. Some caregivers and key informants reported that a reluctance to vaccinate was related to distrust in health professionals and the overall healthcare system. This was reported to be linked to the West Africa Ebola outbreak in 2014–2016, which led to an associated fear of attending health structures such as hospitals.

*'Mothers don't have trust in the people who come to vaccinate. When the doctors arrived, not all [of] the mothers dare[d] to take their children.'* (25-y-old female caregiver of a vaccinated child)

*'When you start to vaccinate, people are afraid . . . Maybe when you vaccinate, they can bring other diseases, such as Ebola.'* (Health supervisor in the community, male)

*'After Ebola, people have doubts and nobody wants their children to go to the hospital.'* (Head of Imams)

## 2. Community involvement during vaccination campaigns

### a. Knowledge, attitudes and skills of CHWs: *'When you welcome well, you vaccinate well.'*

The need for staff working in vaccination campaigns to have appropriate knowledge of vaccinations, a good attitude and to be appropriately dressed was widely discussed in the FGDs and key informant interviews. There were repeated requests from both groups to provide comprehensive training to CHWs on vaccines in order to address questions posed by caregivers during vacci-

nation campaigns.

*'It is needed that they [health professionals] are able to explain the diseases which they vaccinate for, which would help mothers decide to vaccinate their children. But if they do not know why they vaccinate, caregivers will not want to accept the vaccine.'* (32-y-old female caregiver of a vaccinated child)

Additionally, the attitude and presentation of CHWs were raised by caregivers as potential reasons to avoid vaccination. Specific examples included the need for an appropriate greeting and introduction, speaking politely and being suitably dressed. Without adequate attention to these components, caregivers described their reluctance or refusal to vaccinate.

*'You cannot leave your child with a person who gives him something but do not know where they came from.'* (25-y-old female caregiver of a vaccinated child)

*'Their [health professionals] ways of doing [vaccine sensitization] means that caregivers refuse children to get vaccinated.'* (Community agent, male)

### b. Recruiting CHWs: *'If they don't know the neighbourhood, how are they going to vaccinate their children?'*

Appropriate selection and recruitment of CHWs was considered essential for successful vaccination campaigns. All health professionals and the majority of caregivers detailed that CHWs should be locally recruited to ensure that they had in-depth knowledge and experience of the targeted communities. Caregivers identified that this included language competencies in order to properly communicate with targeted populations. Familiarity with the neighbourhoods and the local communities was believed to increase trust in the vaccination campaign and related activities.

*'The father recognized me and gave me authorization to vaccinate his child. It is my network and knowledge of the community which made this child get vaccinated.'* (Community agent, male)

*'There are some CHWs who do not understand Susu, Malinké or Poular [local languages], which are needed when you come to sensitize this community.'* (26-y-old male caregiver of an unvaccinated child)

Some caregivers, however, argued that CHWs should not be recruited on the sole basis of being from a particular community, but should have the necessary competencies to be involved in a campaign, including good communication skills.

## Discussion

Our study provides insight regarding the main perceptions, experiences and challenges relating to measles MVCs in urban settings in Conakry, Guinea. The results highlight the main considerations experienced by participants when deciding whether to vaccinate their children and how to improve vaccination. These included caregivers' requests for a better understanding of vaccines and their side effects and a lack of trust in the healthcare system. Specific suggestions were formulated on how to meet these challenges through improved roles for CHWs in future vaccination campaigns.

Consensus on the need for vaccines and their beneficial effects among health managers, health workers, doctors, Imams and most caregivers was reassuring, especially considering prominent beliefs around the partial success<sup>13</sup> or lack of need for vaccinations in other settings.<sup>14</sup> Our results suggest, however, that further efforts need to be made in providing information about vaccines to caregivers.

Vaccines are sometimes victims of their own success, as reported in high-income settings.<sup>14–16</sup> This is explained by the perception that there is a low risk of vaccine-preventable diseases, since in high-income settings their incidence is low. This contrasts to the findings in our setting, where vaccination is considered beneficial potentially due to regular exposure to vaccine-preventable disease outbreaks in Guinea. Risk perceptions among these communities may be based more on their past experiences rather than on received public health data.<sup>17</sup>

In addition to providing appropriate information to caregivers about vaccines, potential side effects and how to manage them, future MVCs should ensure that caregivers are fully informed about the free management of side effects. The reporting of adverse events following immunization and their free treatment, along with the provision of drugs, is already part of the standard MSF vaccination strategy.<sup>3</sup> There should be wider dissemination of where to refer children for free consultations in the case of side effects by the Ministry of Health and MSF during the sensitization of vaccination campaigns.

Side effects, and the perception of related costs in managing them, were commonly cited factors among caregivers influencing their decision on vaccination; interestingly, these were not significant for health professionals. This difference is consistent with findings in other studies in high- and low-income countries. A study in Australia by Bond<sup>18</sup> identified that doctors reported being extremely unconcerned about the side effects of vaccinations, whereas mothers perceived them to be 'alarming'. In a study in Chad, harmful events linked to vaccines were pointed out by community leaders and caregivers, but were not mentioned by health staff.<sup>19</sup>

One surprising finding in our study was that key informants made numerous references to 'religion' and 'illiteracy' of the communities as reasons for low vaccine uptake, factors which were not supported during the discussions with caregivers. While religion has been reported by several studies as a common barrier to vaccination in different countries,<sup>20,21</sup> an in-depth review of different religions suggests that further evidence is required to understand if the religious barrier is valid.<sup>22</sup> Furthermore, this review stated that religion is used to divert attention from other social or cultural factors related to vaccination acceptance.<sup>22</sup> Similarly, a low educational level is correlated with under-vaccination, although the explanations for this have rarely been investigated.<sup>23</sup> Perceptions about community vaccine hesitancy should originate from in-depth studies with the appropriate methodology, such as qualitative methods,<sup>24</sup> and future analyses should prevent any public health decisions from being made without extensive evidence.

Our study identified a sense of distrust in the health system due to people's experiences during the 2014–2015 Ebola epidemic in West Africa. Studies related to this epidemic showed how communities had little trust in the capacity of the system

to provide safe healthcare.<sup>25</sup> Our study confirms that, unfortunately, this distrust is still influencing communities 4 y after the epidemic. In general, mistrust in institutions has been similarly described in Europe as a reason for vaccine hesitancy<sup>26</sup> and elsewhere in Africa, where dissatisfaction with the health system was a reason for mistrust.<sup>27</sup> Additionally, according to a systematic review of determinants of vaccine hesitancy in Africa, MVCs can trigger more reluctance in comparison with routine vaccination programmes.<sup>27</sup> This may be the case in our setting, in which one of the main barriers reported during campaigns was interaction with CHWs.

Several issues were raised that linked CHWs' competencies, skills and knowledge of vaccination to community acceptance of MVCs. Some caregivers claimed that not enough information was provided during the MVC about what the vaccine was for and how it worked. This indicates the need for more training for CHWs to provide the required information and to answer any questions from caregivers. This recommendation has been reported in other qualitative studies from very different contexts to Guinea, such as from mothers in the USA<sup>28</sup> and caregivers in South Africa.<sup>29</sup>

Local recruitment of CHWs was highlighted, based on the importance of familiarity with the area, language skills and attitude during the sensitization, all of which are linked to the wider issue of trust. By simply introducing and presenting themselves properly, CHWs can increase overall trust in the vaccination campaign. A poor attitude, unfriendliness, arrogance or being inappropriately dressed<sup>30</sup> have already been described elsewhere as reasons for non-vaccination. Our findings contribute to this evidence and we caution against underestimating the role that CHWs play in successful MVC strategies. Furthermore, we highlight that community involvement is a key factor for vaccine acceptance and should therefore be allocated sufficient resourcing and prioritization in the preparation of future campaigns.

The main strengths of our study are the inclusion of a wide range of health staff profiles and caregivers who had either decided to vaccinate or not to vaccinate their children. Saturation was achieved before the planned sample size was reached.

There are two main limitations to this study. Social desirability bias may have affected the results, with some participants feeling uncomfortable or unable to criticize vaccination campaigns that were organized by the Ministry of Health or MSF due to the presence of MSF researchers. To reduce this bias, interviewers explained that they were not linked to the vaccination campaign and did not wear any MSF identifiers. Another limitation was that vaccination status was self-reported and caregivers did not always distinguish between different vaccination initiatives such as MVC, routine vaccination and National Polio Days.

## Conclusions

In two urban communes in Conakry, Guinea, vaccines were positively perceived by both caregivers and key informants. However, several issues were identified which influenced caregivers' decisions on whether to vaccinate or not. Caregivers felt they were given insufficient knowledge on vaccines, side effects and their management, against a background of general lack of trust in the healthcare system. They believe that strengthening CHWs'

knowledge, attitude and skills as well as appropriate recruitment are essential.

In order to increase vaccination coverage in urban settings during campaigns, we recommend improving the positive perception of vaccines by providing messages on the benefits and potential side effects both during and after campaigns. It is vital to continue involving key people, such as religious leaders, in disseminating such evidence-based messages.

Appropriate surveillance and free management of side effects should be guaranteed and prioritized for national programmes and humanitarian partners supporting vaccination campaigns and routine vaccination.

Building trust within the target population is essential. Providing access to reliable information and promoting discussion about the benefits and side effects of vaccines would allow caregivers' concerns to be addressed in a respectful manner.

This is achievable through a community involvement approach, in which CHWs have an important role in building trust. They should be better trained on vaccines, their side effects and their management, and be recruited from targeted communities based on their knowledge of the community, their competencies and ability to communicate.

**Authors' contributions:** JGC, CB and IP conceived the study; JGC and EV designed the study protocol; JGC, KW and SK collected the data. JGC analysed the data. JGC, KW and EV discussed the analysis and the structure of the manuscript. JGC drafted the manuscript with support from KW and EV. EV, KW, CB, KNNZ, BH and IP critically revised the manuscript for intellectual content. All authors read and approved the final version of the manuscript.

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