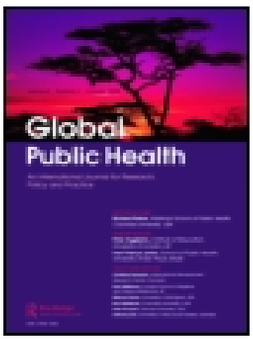

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Trust, community health workers and delivery of intermittent preventive treatment of malaria in pregnancy: a comparative qualitative analysis of four sub-Saharan countries

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ABSTRACT

This qualitative study is part of a project aiming to evaluate a community-based approach to the delivery of intermittent preventive treatment of malaria in pregnancy with sulfadoxine-pyrimethamine (IPTp-SP) through community health workers (CHWs) in four sub-Saharan African countries: the Democratic Republic of Congo (DRC), Madagascar, Mozambique and Nigeria. The study aimed to understand the factors that influence the anticipated acceptability of this intervention. A total of 216 in-depth interviews and 62 focus group discussions were carried out in the four country sites with pregnant women, women of reproductive age, community leaders, pregnant women's relatives, CHWs, formal and informal health providers. Grounded theory guided the study design and data collection, and content and thematic analysis was performed through a comparative lens. This paper focuses on one crosscutting theme: trust-building. Two mechanisms that underpin communities' trust in delivery of IPTp via CHWs were identified: 'perceived competence' and 'community and healthcare system integration'. Communities' perception of CHWs' competence shapes their trust in them, which suggests that CHWs' credentials should be made public and that specialised training in maternal health is required for them. Integration depends on the promotion of socially embedded practices and the involvement of formal healthcare systems in CHWs' work.

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Introduction

Malaria is a major health problem, especially in sub-Saharan Africa (SSA). Pregnant women are particularly vulnerable to malaria, requiring effective protection to prevent the adverse

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consequences of the infection (Steketee et al., 2001). Eleven million pregnancies were exposed to the infection in 2018, leading to 872.000 children born with a low birthweight (World Health Organization [WHO], 2019). The recommendations of the World Health Organization (WHO) to prevent malaria in pregnancy rely on the use of insecticide treated nets (ITNs), the administration of intermittent preventive treatment in pregnancy with sulphadoxine-pyrimethamine (IPTp-SP), and a prompt diagnosis linked to effective treatment of malaria (WHO, 2017a). In all areas with moderate-to-high malaria transmission in Africa, WHO recommends the administration of IPTp-SP for all pregnant women at each scheduled antenatal care (ANC) visit from the second trimester of pregnancy onwards (WHO, 2012).

Although it has already been demonstrated that IPTp-SP is highly cost-effective for preventing malaria in pregnancy, improving newborn health, and reducing neonatal mortality (Agarwal et al., 2015), its coverage is still low. This is partly due to the low coverage of ANC itself, although the observed gap between IPTp coverage and ANC coverage in SSA indicates this is not the sole explanation (Amankwah & Anto, 2019; Ameh et al., 2016; Diala et al., 2013; Maternal and Child Health Integrated Program [MCHIP], 2012). Healthcare system obstacles to IPTp delivery have been identified (Azizi et al., 2018; Hill et al., 2013; Maheu-Giroux & Castro, 2014), yet evidence on barriers to uptake from the beneficiaries' perspective beyond those that condition ANC attendance has been less conclusive. Some studies have identified women's perceived low risk of malaria in pregnancy, lack of awareness of the preventive value of SP, fears of perceived side effects or refusal to take it on an empty stomach as potential barriers to IPTp uptake at the health facility level (Almond et al., 2016; Boene et al., 2014; Onyeneho et al., 2015; Pell et al., 2011; Webster et al., 2013).

In order to overcome these barriers, community-based interventions, including those involving the delivery of IPTp, have been successfully developed to improve the coverage of malaria prevention strategies in some settings (Oo et al., 2019; Salam et al., 2014). With regard to IPTp, some studies have also shown a correlation between community-based interventions and an increase in the use of ANC services (Gies et al., 2009). Furthermore, it has been suggested that including community engagement activities (i.e. sensitisation, mobilisation and active involvement) with health facility-based ones increases the awareness of the value of IPTp (Agarwal et al., 2015). As with other public health strategies, community involvement is a key factor in malaria prevention, and it has been shown that community health workers (CHWs) may play a relevant role in promoting public health interventions and in delivering primary health care tools (Bojang et al., 2011; Farquhar et al., 2008; Lehmann et al., 2009; Lewin et al., 2010; Tine et al., 2013).

Moreover, CHWs can constitute an important connection between communities and the formal healthcare system due to their unique position as intermediaries (i.e. their belonging to both communities and health sector). A key aspect of CHWs' role is their capacity to sustain trusting relationships with the communities they serve and the health system actors backing them. To date, most research on the role of trust in the health sector has focused on the relationships between facility-based health care providers and patients (Gilson, 2003; Law et al., 2019; Okello & Gilson, 2015; Østergaard, 2015). The evidence gathered on the centrality of trusting relationships in Ebola case-management is a case in point (Hewlett et al., 2005). However, other studies have also focused on the specificities of trust-building in the work of CHWs (Druetz et al., 2015; Kok et al., 2017; Kok et al., 2015; Mishra, 2014; Saprii et al., 2015). For instance, a study set in Uganda (Singh et al., 2015) found that investing efforts in building trust between communities and CHWs was key to the acceptability of a maternal and newborn health education intervention.

We carried out a qualitative study on the *anticipated* acceptability of a community-based approach to IPTp as part of a broader project aiming to evaluate *actual* IPTp-SP delivery through CHWs in four SSA countries: the Democratic Republic of Congo (DRC), Madagascar, Mozambique, and Nigeria. The main objective of the study was to understand the social context and dynamics in order to identify key factors that may influence Community-IPTp (C-IPTp) acceptability where the project would be implemented. This article draws from the initial exploratory phase of

the study and presents a comparative analysis of the data from the four countries involved in the study. The analysis is centred around a key finding that cuts across the four sites, namely the centrality of 'trust-building' in enhancing C-IPTp acceptability. Thus, the main purpose of the analysis is to highlight the mechanisms that can contribute to building beneficiaries' trust in CHWs to deliver IPTp-SP.

Methods

Study design

Given the exploratory and implementation-oriented nature of the research, the study design followed a qualitative approach and was based on the principles of Grounded Theory (Charmaz, 2006), whereby theory is grounded in the data gathered rather than guided by a pre-existing theoretical framework. In other words, the approach to the analysis and theory-formation is data-driven. However, it is worth defining certain key concepts which are at the background of the study design, framed the process of data analysis and laid the basis for codes and themes to emerge.

Firstly, drawing from a recent review of studies measuring the acceptability of healthcare interventions (Sekhon et al., 2017), the present study design was guided by the definition of this concept as 'a multifaceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention'. It is important to note that the present analysis is based solely on data gathered regarding the *anticipated* acceptability of the intervention, which is an estimation of acceptability before the intervention takes place.

Secondly, the definition of trust guiding this analysis draws from social science literature on the subject (Gilson, 2003). In this light, trust is understood as the acceptance of a situation of risk in which the trustor believes the trustee will act in the best interests of the trustor. Yet the forms that trust takes can be placed within a spectrum where, on the one hand, we find strategic trust and, on the other, moralistic trust. Strategic trust is rooted in expectations of how others *will* behave and can thus be calculative, self-interested and involving a risk analysis, or it can be affective and based on emotional bonds and social obligations. Moralistic trust is normative in nature and is rooted in expectations about how others *should* behave. In practice, however, different forms of trust co-exist and evidence suggests that trust is generally driven by a 'combination of strong personal bonds and the belief that it enhances our own interests' (ibid).

Study sites

The study was carried out in eight districts of the four countries between March and June 2018: Kenge and Bulungu in DRC, Mananjary and Toliary II in Madagascar, Nhamatanda and Meconta in Mozambique and Ohaukwu and Akure South Local Government Areas in Nigeria. The selection of countries was based on the following criteria: presence of CHWs, having IPTp policies in place, commitment from the Ministry of Health (MoH) and efficient working relationships between the consortium and the respective MoH. In all countries malaria is one of the leading causes of maternal and child morbidity and mortality, yet the demographic and health profiles and the CHW model of each country varied.

Democratic Republic of Congo

The DRC accounts for 57% of total malaria cases in Central Africa with an incidence rate of 295/1,000 individuals of the population at risk (WHO, 2017b, 2019). In 2015 there were 19 million malaria cases in the country and 42,000 deaths attributable to the infection (ibid). It is estimated that only 11% of pregnant women took at least 3 doses of IPTp in 2013. ANC coverage is high for attendance of at least one visit (89.4%), but low for attendance of at least four visits (48%)

(Ministère du Plan et Suivi de la Mise en œuvre de la Révolution de la Modernité [MPSMRM] et al., 2014).

The MoH has recently reoriented the healthcare system to increase the role of communities in healthcare delivery. A key development in this area has been the creation of 'cellules d'animation communautaire' (CAC), which act as village health committees. CHWs (locally called 'relais communitaire' or RECO) are volunteers who promote and deliver health interventions in communities (Farnham Egan et al., 2017a). The MoH identifies and selects CHWs in collaboration with the CAC in each village and neighbourhood. Despite the lack of detailed information about their training (ibid.), CHWs' activities include regularly updating vital statistics; distributing ITNs and managing mild cases of malaria with ACTs; assessing respiratory infections; administering Amoxicillin; and distributing and replenishing family kits, which can also be specific for pregnancy and usually include basic medicines, vitamins and essential health materials (Diese et al., 2018).

Madagascar

Malaria is endemic in 90% of Madagascar and the entire population is considered at risk of the disease (WHO, 2019). In 2015, there were 2.4 million cases of malaria and 6,000 deaths attributed to the infection. Only 10.3% of pregnant women received 3 doses of IPTp-SP during their last pregnancy despite there being 51% coverage of ANC (four or more visits) (Institut National de la Statistique [INSTAT] et al., 2016).

The National Community Health Policy, developed in 2009 provides the framework to incorporate CHWs in the delivery of health services and products at the community level, including those for malaria control (provision of ITNs, rapid diagnostic tests (RDTs) and artemisin-based combination therapies (ACTs)). CHWs work for the MoH on a voluntary basis, report their activities to the basic health centres, and are nominated by their communities. Each community (*fokontany*) typically has two CHWs, either male or female, many of whom choose to do the work for an extended period of time. CHWs receive between five and twelve days of initial training (Perry, 2020), and health facility chiefs seem to be involved (Farnham Egan et al., 2017b). Depending on the district/region, CHWs may be supervised and supported by local nongovernmental organisations (NGOs) and bilateral health projects and, through these, they may receive some non-monetary incentives in the form of tools and promotional items.

Mozambique

Mozambique is among the six countries that accounted for more than half of all malaria cases worldwide in 2018 (WHO, 2019). Since 2010, both incidence and mortality attributed to malaria have decreased significantly, but the figures are still alarming. In 2015, there were 8.3 million cases of malaria and 15,000 deaths attributed to the infection (WHO, 2019). ANC coverage is high for attendance of at least one visit (92.6%), but low for attendance of at least four visits (54.6%) (Ministério da Saúde [MISAU] et al., 2015). The estimated IPTp coverage of three doses of SP is 32.6% (ibid), but regional estimates vary.

The MoH's policy on community interventions is anchored in the use of CHWs – called 'Agentes Polivalentes Elementares' (APE) – under the APE National Program, which was established in 1978, interrupted due to the civil war and then revitalised in 2010 (Kok et al., 2017). Under the coordination of the provincial health directorate of the MoH (Farnham Egan et al., 2017c) CHWs are formally trained for four months and are expected to spend 80% of their time in promotion and 20% in curative tasks (MISAU, 2010). They are provided a subsidy defined by the government but payment is dependent on donor funding (Kok et al., 2017). CHWs are selected by communities and, despite policy efforts to promote female volunteers, the majority of CHWs are male (ibid). The APE's responsibilities include the diagnosis of malaria with RDTs, management of non-complicated cases of malaria, health education and promotion, among others (Farnham Egan et al., 2017c). According to the National Strategic Health Plan (2014-2019), CHWs are also expected to promote ANC attendance (MISAU, 2013).

Nigeria

Nigeria accounts for 55% of total malaria cases in West Africa, with 110,000 deaths due to the infection in 2015 (WHO, 2019). Since 2010 the incidence of malaria has decreased by 50%, but in 2015 there were still 61 million cases of malaria (ibid). It is estimated that only 19% of pregnant women take 3 doses of IPTp-SP (National Malaria Elimination Programme [NMEP] et al., 2016). ANC coverage for attendance of at least one visit is 63.2% (with significant regional variation), whilst attendance of at least four visits is 57% (National Population Commission & ICF, 2019).

In Nigeria, the community health provider cadre includes different subgroups, which vary in their functions and training. They range from community health officers (CHOs), based at health facilities and providing a broad range of services, to community health extension workers (CHEWs) and junior CHEWs (JCHEWs), all of them employed by the MoH (Farnham Egan et al., 2017d). Another cadre is the community resource person (CORP), a term that refers to a variety of informal providers, including traditional birth attendants and village health workers, who are usually volunteers, often supported by communities or NGOs (ibid). There is yet another cadre subgroup referred to as community-directed distributors (CDDs), which are community-selected volunteers, trained to provide health education and to distribute health commodities within communities, including all doses of IPTp.[1] For the sake of clarity, hereafter CDDs will be referred to as CHWs.

Recruitment and data collection

The study involved a total of 797 participants comprising three target groups. The first group included formal health workers (such as medical doctors, nurses, and midwives), CHWs, traditional birth attendants and traditional healers. The second group consisted of the target population for C-IPTp, in this case pregnant women and women of reproductive age (15–45 years of age). The last group included laypersons (to the extent that they are not formal or informal health providers) from the communities of the study sites, consisting of community leaders, household heads and other pregnant women's relatives. Table 1 presents the number of participants per site and in total.

The identification of respondents was based on reasoned choice: country coordinators contacted local community leaders and regional health authorities to identify key informants who were then invited to participate in focus group discussions (FGDs) and in-depth interviews (IDIs). Recruitment was based on meeting the aforementioned target group criteria but also on their availability and agreement to participate, therefore combining purposive and convenience sampling approaches. For healthcare professionals, only staff with IPTp training were purposively selected. Research teams were coordinated by a local social scientist from each country partner institution. Fieldworkers were trained to carry out participant recruitment and data collection. Fieldwork teams included local guides (to ease community entry), interviewers and facilitators, translators and transcribers.

A total of 216 IDIs and 62 FGDs were conducted (see Table 2). The data collection tools consisted of semi-structured question guides that sought to capture participants' knowledge of maternal health, malaria prevention in pregnancy and IPTp, as well as perceptions of C-IPTp and potential barriers and enablers that could influence acceptability of the intervention. Country-specific question guides were translated into the local languages and adapted to meet local context specificities. FGDs and IDIs were digitally recorded, transcribed and translated into official languages (French in DRC and Madagascar; Portuguese in Mozambique; English in Nigeria).

Table 1. N° participants recruited.

DRC		MADAGASCAR		MOZAMBIQUE		NIGERIA		
Kenge	Bulungu	Mananjary	Toliary	Nhamatanda	Meconta	Ohaukwu	Akure South	TOTAL
155	180	47	48	104	103	80	80	797
335		95		207		160		

Table 2. Overview of FGDs and IDIs performed per area and country.

Profiles	DRC		Madagascar*		Mozambique		Nigeria		TOTAL
	Kenge	Bulungu	Mananjary	Toliary II	Nhamatanda	Meconta	Ohaukwu	Akure II	
Pregnant women	FGD 4 IDI 1	FGD 4 IDI 5	IDI 16	IDI 16	FGD 2 IDI 6	FGD 2 IDI 6	FGD 4 IDI 2	FGD 4 IDI 2	FGD 16 IDI 54
Women of reproductive age (15-45 years old)	FGD 4 IDI 2	FGD 4 IDI 3	IDI 16	IDI 16	FGD 2 IDI 6	FGD 2 IDI 6	FGD 4 IDI 2	FGD 4 IDI 2	FGD 16 IDI 53
CHWs	FGD 2 IDI 2	FGD 2 IDI 3	IDI 6	IDI 6	FGD 1 IDI 6	FGD 1 IDI 6	FGD 2 IDI 3	FGD 2 IDI 3	FGD 10 IDI 40
Family/Household members	FGD 2 IDI 1	FGD 2 IDI 4	IDI 4	IDI 4	FGD 2	FGD 2	FGD 4 IDI 2	FGD 4 IDI 2	FGD 20 IDI 22
Health staff (ANC)	FGD 2 IDI 2	FGD 2 IDI 3	IDI 5	IDI 6	IDI 6	IDI 6	IDI 1	IDI 1	IDI 35
Midwives	N/A	N/A	N/A	N/A	IDI 6	IDI 6	N/A	N/A	IDI 12
TOTAL	FGD 14 IDI 20	FGD 14 IDI 20	IDI 47	IDI 48	FGD 7 IDI 30	FGD 7 IDI 30	FGD 14 IDI 10	FGD 14 IDI 10	FGD 62 IDI 216

Data management and analysis

Grounded Theory shaped both the data collection and analysis of the current study. This is an inductive and iterative approach whereby research questions, data collection and data analysis are reformulated during the entire research process (Charmaz, 2006). In this sense, data collection and analysis progressed simultaneously, allowing the tools to be modified in light of emerging themes resulting from on-going analysis and identification of future research questions. The data collected in each site was interpreted through a combination of content and thematic analysis (Neuendorf, 2019). Content analysis involved categorising data based on the pre-determined themes that structured the contents of data collection tools. Thematic analysis consisted of identifying emerging themes with regard to attitudes and perceptions that could influence C-IPTp acceptability. Qualitative software (Nvivo or Atlas Ti, depending on local researchers' preferences) was used by the lead social scientist at each country for coding the data. The social science team at the coordinating institution then compared the analyses from the different sites in order to elucidate commonalities and divergences. During this process, there was a constant interaction between all parts to resolve key interpretation issues.

Ethical considerations

This study was approved by the Ethics Review Committee of the WHO (Geneva, Switzerland), the Research Ethics Committee of the Hospital Clinic (Barcelona, Spain), the Ethics Committee of the School of Public Health at the University of Kinshasa (DRC), the Ethical Review Committee of Ebonyi and Ondo States (Nigeria), the Biomedical Research Ethics Committee of the MoH (Madagascar) and the Institutional Health Bioethics Committee of the Centro de Investigação em Saúde de Manhiça (Mozambique). Written consent was obtained for every participant and digitally recorded.

Results

Across the four countries we identified several factors influencing trust building with regard to C-IPTp acceptability gathered around two main themes: 'Perceived CHW competence' and 'Community and healthcare system integration'. Within the first theme, a series of sub-themes emerged: 'Making training credentials public', 'Need for specialised training' and 'Role expectations'. The following sub-themes were identified within the second theme: 'Socially embedded practices' and 'Relationship with the healthcare system' (Figure 1).

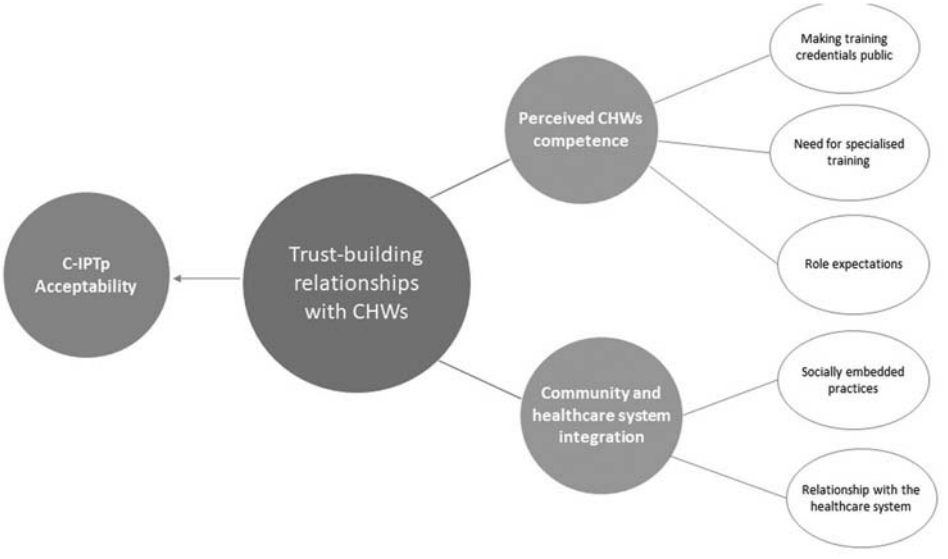

Figure 1. Thematic structure.

Perceived CHW competence

Overall, participants in all the four countries revealed that the perceived competence of CHWs is a key factor determining pregnant women and relative's degree of confidence in C-IPTp. As the following quote illustrates, making the training credentials of CHWs public must be part of efforts seeking to enhance community's confidence in C-IPTp.

> The strategy [to make women adhere to C-IPTp], as we [CHW] have always been trained, when we arrive in a community we organize a meeting and on the basis of that meeting we explain [the intervention] to all participants and in turn they will expand to other people. (Mozambique, CHW, IDI)

Participants also expressed concerns regarding CHWs' capacity to deliver SP, especially among respondents in DRC, Madagascar and Nigeria. In some cases, their perceived capacity was questioned due to CHWs' known lack of specific training in maternal health issues.

> If I go to the CHW, he will give me what advice? Because he didn't learn all of these things. I have to go to the nurse who can give me the explanation. No CHW is able to explain it to me. He, in turn, is simply sent by others to do this work. (DRC, pregnant women, FGD)

> Those who do not accept them as qualified health workers do not go to them for advice. I will not because they do not know about women in pregnancy. (Nigeria, woman of childbearing age, FGD)

With the exception of Mozambique, it was widely shared that the most appropriate people to provide maternal health assistance were skilled personnel from formal health facilities, since CHWs' involvement in maternal health is usually limited to health promotion and sensitisation.

> CHWs do not have the same attributions as midwives, their role is only to sensitise pregnant women. (Madagascar, pregnant woman, IDI)

Overall, from the beneficiaries' perspective, the major concern regarding CHWs' lack of specialised training is the management of potential complications following SP administration.

> The CHWs are not allowed to share SP or malaria drugs. And, if they are allowed to, some people will accept it from them while some will not, especially because they are not health workers and may not know the side effects of those drugs on the baby or the pregnant mother. (Nigeria, woman of childbearing age, FGD)

In DRC, health providers were also sceptical of CHWs' capacity to manage maternal health issues. In their view, CHWs are currently unable to calculate a woman's gestational age, so if the responsibility of administering SP were entrusted in them, it would be necessary to train them first to avoid possible complications.

> They [CHWs] can tell that this lady is pregnant, but the pregnancy has not reached the 16th week and, by ignorance, they can give it to a woman who is at the 12th week of her pregnancy; you have to associate them with the medical staff. (DRC, health providers, FGD)

In the case of Mozambique, respondents didn't express any doubts regarding CHWs' capacities. Both laypersons and health providers were clear in their acceptance of the proposed intervention because they considered that CHWs have already been working with pregnant women and reported they would only require additional specialised training.

> APEs [CHWs] will be prepared to administer the IPTp after being trained because they have already done similar work in the community, they [already] do nutritional education, they talk about family planning, so it will be easy. (Mozambique, health provider, IDI)

The study revealed a high level of awareness of IPTp benefits among informal health providers and pregnant women in Mozambique.

> Yes, if the APEs came here in the district to give this "pill" [SP], pregnant women would accept because the hospital advises to take, the hospital is distant and the initiative is positive. (Mozambique, matron, IDI)

> It [Fansidar] is good for our health. When it is provided it will be taken, unless they say that in that condition [pregnancy] it cannot be taken. When they [health providers at the health facilities] give it, it is not because they are crazy. They give it for your prevention. (Mozambique, pregnant women, FGD)

Community and healthcare system integration

Community participation in the selection process of CHWs was shown to be a significant determinant in trust-building. As illustrated in the following quotes, the social embeddedness of CHWs is key for communities' understanding of their motives and purpose.

> The villagers are afraid of foreigners like you, coming from Antananarivo, they may doubt about the reason of your visit. (Madagascar, male relative, IDI)

> The APE is the first way to stay close, where there is no medical post. He is a person chosen in the community who went to study to help the population. (Mozambique, midwife, IDI)

> Yes, we have the CHWs and most of them are my friends, they come as part of our friendship and not as the sanitation service which passes to control the parcels. (DRC, household head, IDI)

In addition, in the case of Mozambique, the study revealed that involving local community governance structures is key to building trust in CHWs' activities.

> In my opinion, before the activists [CHWs] come to the community to distribute the pill called Fansidar free of charge, it is necessary to arrive at home or at the headquarters, as an example here on the neighbourhood block to notify to the [neighbourhood] secretary the objectives of the distribution of Fansidar to avoid the worst [illness] in pregnant women. (Mozambique, male relative, FGD)

Due to these community involvement processes, and to the fact that they are backed by formal healthcare systems, CHWs constitute a bond between the communities they serve and the formal healthcare systems. This intermediary role was clearly expressed by one of the participants in DRC.

> CHWs are the mouth that connects the community and the [health] centre; that is to say, they are there, they take the problems of the [health] centre, they bring them to the population and vice versa. For example: we are here at the health centre, the city is vast. CHWs can leave and find a problem that is serious and bring it back to the [health] centre. Without their contribution, the situation may worsen. (DRC, CHW, IDI)

A key component nurturing the ties between communities and the formal healthcare system is the use of active and sustained communication channels, as the following quote illustrates.

> We will take this [SP delivered by CHWs] if there is an awareness campaign announcing the arrival of CHWs who will proceed with the distribution of this medication. But, if not, I will not take it. (DRC, pregnant woman, FGD)

> In addition to the activists [CHWs], the neighbourhood secretary must hold a meeting with the community. (Mozambique, male relative, FGD)

In some settings in Nigeria, participants pointed to the need for communication activities to emphasise that a C-IPTp programme would be organised and supported by higher orders of healthcare governance structures, be they NGOs or governmental.

> If they come, it is possible that I would not collect it from them, because I would initially want to confirm that they have been properly trained, that truly it is the government that has sent them or non-governmental organisations. (Nigeria, pregnant woman, IDI)

These remarks point to the need to strengthen healthcare system involvement in CHWs' activities. This need for integration is related to the aforementioned doubts about CHWs' capacities. Participants claimed CHWs' performance in a C-IPTp programme needs the legitimacy of a continuous presence of health experts following-up their work. In DRC and Nigeria, some participants (laypersons, not health providers) were of the opinion that CHWs need to be accompanied by health staff for them to gain confidence in the CHWs' performance.

> Pregnant women will take it easily because they know this drug is treating us, we find healing through it. They will take no problem because the supervisors follow us behind to see how the operation is going and beg for our shortcomings. (DRC, CHW, IDI)

However, an excessive presence of the healthcare system in CHWs' activities by appearing too related to governmental institutions can have the opposite effect, as pointed out by some of the participants, particularly in Mozambique and DRC.

> It depends on the education of each family. In general, they [CHWs] are well received although the others who refuse [CHWs], call them liars and [claim] that the Congolese State use them to kill people. (DRC, woman of childbearing age, IDI)

Discussion

This study explored communities' and healthcare providers' perspectives regarding C-IPTp prior to its introduction as a pilot implementation project in four SSA countries. The present analysis focuses on a theme central to the findings across the four study sites: building trusting relationships between CHWs and the prospective beneficiaries as a critical factor influencing C-IPTp acceptability.

In spite of being socially embedded in communities, CHWs are often not trusted to carry out some of their assignments, and those linked with clinical practice seem to create certain concerns among the community (Boene et al., 2016). Two mechanisms contributing to building trusting relationships with CHWs in the context of C-IPTp have been identified across the four study sites: perceived competence of CHWs and community and healthcare system integration. On the one hand, the perception of not having sufficient qualified medical training is one of the causes of mistrust in CHWs' performance in delivering IPTp. Specifically, a recurrent concern among participants – mostly laypersons but also among some health providers – has been the perceived lack of specialised training in maternal health issues. This finding is supported by a recent study in Burkina Faso, which identified two loci of trust in CHWs' performance in malaria case management (Druetz et al., 2015). The first locus of trust was CHWs' social embeddedness, and the second was communities' trust in CHWs' abilities, which in turn is fostered by the training received (ibid).

The issue of perceived lack of competence could also be influenced by expectations and norms relating to CHWs' roles, beyond the more tangible aspects of competence (i.e. trainings and qualifications). Our findings indicate that CHWs are often not seen as the appropriate actors for providing SP to pregnant women and suggest it could be a matter of roles rather than, or in addition to, a matter of lack of training. This could be aligned with other studies in SSA which have suggested that female CHWs were perceived to be more capable of providing health services related to pregnancy, pointing to a greater sense of trust between women and female CHWs (Steege et al., 2018). In this sense, reasoning for discrediting CHWs could also be related to a perceived exceptionalism with regard to pregnancy, as well as expectations and norms specific to managing women's health. This could be aggravated by policies and programmes that fail to consider the influence of gender roles within communities, as they often do, and that in effect prioritise male CHWs (Millington, 2018). This interpretation would require further research into local conceptualisations of maternity and gender roles to identify whether these could be influencing laypersons' judgment of CHWs' capacities in the context of C-IPTp.

With regard to the second mechanism, our findings reveal that a greater integration between communities and the formal healthcare system through concrete strategies of community involvement also contributes to building trust in CHWs' performance. Recruiting CHWs from the communities they serve, involving local authorities and ensuring recurrent communication are key to further embed CHWs' activities in their social context. This sense of relatedness (Druetz et al., 2015) can contribute to breaking up the possible reluctances to C-IPTp uptake. This is in agreement with multiple studies (Druetz et al., 2015; Kane et al., 2016; Kok et al., 2017; Tine et al., 2013), including a recent study on access to quality medicines in Ghana, which claimed that 'where trust is socially embedded, buyers are inclined to give the retailer the benefit of doubt, even when presented with possible evidence to the contrary' (Hamill et al., 2019).

However, having a common residence or a common sociocultural background does not necessarily mean a direct correlation with acceptance of CHWs' activities. Thus, whilst it is widely recognised that the bonds of kinship, friendship or other social structures may have a positive effect in patient-provider relationships, affective relationships cannot erase mistrust in the formal system, but can rather 'make uncertainty more manageable' (Hamill et al., 2019). This can also be applied to the findings in our study, where the facilitating role of CHWs with regard to C-IPTp is not always perceived to be sufficient to guarantee its success.

Our results support the idea that social bonds strengthen relationships of trust between communities and CHWs only if efforts in integrating communities and the healthcare system are bidirectional. In other words, not only should communities be involved in the recruitment or the selection of CHWs, but also, the healthcare system should be more visible in CHWs' work, either by publicly associating their work with the established public health programmes or by directly engaging medical staff as supervisors. This proximity is deemed necessary to legitimise the work of CHWs (Kane et al., 2016). However, our findings also show that a delicate balance must be struck in the integration of CHWs into the healthcare system.

Occasionally, beneficiaries seem cautious about CHWs' involvement in maternal and child healthcare precisely because of this integration. Other studies in SSA have already observed that if communities mistrust the government this will negatively affect their confidence in CHWs (Agnarson et al., 2010; Woskie & Fallah, 2019), or in any other health provider, as is the case with indoor residual spraying campaigns (Magaço et al., 2019). Another study in Uganda found that CHWs were often rejected by communities due to fears of being arrested for 'lack of hygiene' due to the poor conditions of their pit latrines, because CHWs are associated with the government (Singh et al., 2015). The study explains this mistrust in light of Uganda's colonial administration, during which people were arrested for not complying with hygiene requirements. However, as our results reveal, there is substantial variability with regard to communities' attitudes towards the state, as shown by the differences between the mistrust of participants in the DRC and Mozambique, and the need for state legitimacy in Nigeria. For community-based interventions to succeed,

it is necessary to first gain an in-depth understanding of the relationship between a given community and the respective governmental structures, and then tailor accordingly.

Lastly, the Mozambique case constitutes an exception in the analysis. Despite the few cases of mistrust, which seem more directed to government institutions than to CHWs themselves, Mozambique is the only study site where both trust-building mechanisms seem to be successfully mobilised, in a way they even seem to be intertwined. As previously outlined, the Mozambican CHW programme has a long and successful implementation history. CHWs are selected by communities with the support of district health directorates, in addition to receiving formal extensive training and being supervised by district health representatives, which also provides CHWs with a sense of belonging to the health system (Ndima et al., 2015). Yet, even when supervision strategies seem to fail, communities often take on a monitoring role (ibid.). This model exemplifies the two-way integration between the healthcare system and the community via CHWs, thus facilitating communities' trust in their role. These characteristics help explain why their role has not been discredited by the participants of this study site.

Having closely examined a factor that is key to C-IPTp acceptability, we are confident that the findings from this study may provide meaningful insights into how community-based programmes could be designed in ways that ensure improved adherence and, in turn, enhance programme sustainability. In essence, trust-building is being placed here as a critical factor for a community-based intervention to succeed.

Due to its intermediary position, the role of CHWs is usually perceived as central to health system performance in low –and middle-income countries (Kok et al., 2017). Nevertheless, based on our results, it can be inferred that solely relying on the existence of CHWs programmes in these settings is not enough to promote acceptability of health interventions, especially in the context of maternal health. Actually, building trust in CHWs is still a critical issue that health interventions should explicitly address, and our study represents an opportunity for developing the necessary guidance.

Our results point at the need to acknowledge the existence of a symbolic distance between communities and health interventions, meaning that more observable efforts should be made to foster solid partnerships between communities and health services. The two identified mechanisms underlying trusting relationships with CHWs (namely, 'Perceived CHW competence' and 'Community and healthcare system integration') inform of key areas within community-based interventions that should be specifically targeted. In that line, communication strategies should address the sources of mistrust identified in this study, not only to tailor sensitisation messages accordingly, but also to define locally legitimated communication channels, which would, in turn, stress the sense of connectedness between the healthcare system and the community. At an operational level, health interventions should devise procedures aimed at effectively involving health professionals, CHWs, and community representatives, and ensuring visible bonds between them at different stages of the intervention (such as recruitment, training, and supervision of CHWs). Ultimately, engaging formal health providers, beneficiaries, and a wide range of laypersons from the communities may help reduce this distance and, indeed, trigger the abovementioned mechanisms that would lead to greater trust, not only in CHWs' performance, but in the overall intervention.

Conclusion

This paper has drawn from an exploratory qualitative study on *anticipated* acceptability of C-IPTp in four SSA countries: Mozambique, Nigeria, Madagascar and DRC. We have found that building and sustaining trusting relationships with CHWs is essential to the success of community-based strategies for delivering IPTp-SP. Two key mechanisms have been identified: communities' perceptions regarding CHWs' competence, and the promotion of community and healthcare system integration through concrete strategies of community and healthcare system involvement via CHWs.

Finally, this study could contribute to providing guidance for community-based programme designs, especially aiming at fostering partnerships between communities and health services.

Limitations

It is challenging to compare different country studies due to their different socio-economic and cultural contexts. For this reason, a crosscutting theme had to be identified, even if at the expense of richer and more detailed localised accounts. In this sense, the aim of comparing different field sites at the same time limits the possibility of describing the socio-political and cultural particularities of each site in more detail.

Note

1. The C-IPTp implementation project will work with CDDs. See: https://www.tiptopmalaria.org/countries/nigeria/

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