



How unlicensed drug vendors in rural Uganda perceive their role in the management of childhood malaria



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ABSTRACT

Background: A large number of caregivers in Uganda rely on the private drug delivery sector to manage childhood illnesses such as malaria. In rural settings where the formal private sector is scarce, unlicensed retail drug outlets are an important initial source of care for households. Despite their abundance, little is known about them. This study explores unlicensed retail drug outlet vendors' perceptions of their practice and social environment in one rural district of Uganda.

Materials and methods: A qualitative design using semi-structured interviews was conducted with vendors from unlicensed retail drug outlets across all 10 sub-counties of Butaleja District. The study was conducted over a six-week period in 2011. Open-ended questions were used to gain insight into participants' perspectives, and data were analyzed using acceptable qualitative research protocols.

Results: Interviews were carried out with 75 vendors by trained local research assistants. Most vendors operated out of drug shops, just over half were both owners and shop attendants, and only 14% had qualifications to apply for operating a licensed drug shop. Vendors' experiences with managing malaria in children aged five and under in their community revealed five major themes, their perceptions of: 1) their role in the community, 2) their ability to manage uncomplicated malaria in young children, 3) the challenges of day-to-day operations, 4) the effect of regulatory policies on their ability to serve their communities, and 5) the prospect of future training programs. While the literature has raised concerns regarding the quality of care provided at such unlicensed outlets, most vendors in this study had a limited awareness of their deficiencies.

Conclusions: There was a general sentiment among vendors that the public health system within Butaleja was failing the community and their presence was filling an important vacuum. Given the dominance of unlicensed retail drug outlets over their formal (licensed) counterparts in many rural settings, further deliberations and research is critical to determine how best to fit in and create value from the unlicensed sector within the formal health system.

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1. Introduction

Malaria is one of the leading causes of morbidity and mortality in Uganda, resulting in significant suffering and economic burden (Black et al., 2010; World Health Organization (WHO), 2015b; Yeka et al., 2012). Among the countries of sub-Saharan Africa, Uganda has the third highest malaria rate, following only the Demo-

cratic Republic of Congo and Nigeria (World Health Organization (WHO), 2015b). The disease is endemic in 95% of the country, with intense year-round transmission giving rise to a large number of cases (Okello et al., 2006). In 2014, there were 19,201,136 suspected malaria cases and 5921 malaria deaths reported for Uganda (World Health Organization (WHO), 2015a, 2015b). Confirmatory diagnostic testing followed by prompt treatment with an artemisinin-based combination therapy (ACT) has been the mainstay for managing acute uncomplicated malaria for over a decade.

How quickly caregivers of young children can access appropriate malaria care remains an important determinant of morbidity and mortality (Cohen et al., 2012). Accordingly, over the past few decades, there has been a concerted effort by the Ugandan government to introduce within the public and private formal health system initiatives to improve access to ACTs and parasitological

Abbreviations: ACT, Artemisinin-based combination therapy; iCCM, Integrated community case management; CHW, Community Health Workers; DV, Drug vendor; AMFm, Affordable Medicines Facility-malaria.

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diagnosis (ACTwatch Group, 2014; Mbonye et al., 2015; Talisuna et al., 2012; Tougher et al., 2012). In the public health sector, this has included improving access to free antimalarials and diagnostic tests; introducing clinical audits, in-service training of health providers, and job-aids to health care workers; and rolling-out of the integrated community case management (iCCM) program supported by community-health workers to bring services and treatment closer to the community (ACTwatch Group, 2014; Ajayi et al., 2008b; Marsh et al., 2012; USAID, 2015). Recognizing that there are a number of political, economic, and sociocultural factors beyond knowledge influencing provider practices at public facilities in Uganda, and acknowledging there is little information on how best to change provider practices in the public setting, attempts have also been made to strengthen fever case management at formal private sectors (AMFm Independent Evaluation Team, 2012; Awor et al., 2014; Littrell et al., 2011). While these efforts have substantially increased diagnostic testing and receipt of ACT nationally since 2009 (testing increased from 17% to 36%, ACT receipt on the same/next day following the onset of fever from 18% to 49%), a significant gap persists between practice and the national 2010 and 2015 targets (Ministry of Health, 2005; United States Agency for International Development (USAID), 2015; Uganda Bureau of Statistics (UBOS) and ICF International, 2015; Uganda Bureau of Statistics (UBOS), 2010).

In response to a rural community's concern with sub-optimal malarial treatment for young children, a series of independent but integrated research was carried out in the rural District of Butaleja, Uganda. The goal was to identify sustainable community-based strategies to improve malaria case management for children five years and under. This large scale research is the first such initiative in Butaleja District. Results from a household survey with over 400 caregivers of children with presumed malaria found that nearly a third of children received no antimalarial whatsoever, about a third received an appropriate antimalarial, and the remaining third received subordinate antimalarials (Kassam et al., 2016b). Overall, 41% of children were reported to have received an ACT and 21% received a blood test over the course of their illness, confirming the less than desirable usage of ACTs and diagnostic tests by national studies. Home management was the most common first action reported by three-quarters of the caregivers, with all ACTs given as part of the first action sourced from household's home-stocks. When caregivers visited private outlets, visits to drug shops that were predominantly to unlicensed retail drug shops. A subsequent case study revealed that getting the runaround and experiencing medication stock-outs at public facilities was a common occurrence, with caregivers regularly being referred to drug shops to purchase their medications (Kassam et al., 2016c). Over half of caregivers expressed difficulties with obtaining the best antimalarial for their young children, with 44% of caregivers reporting problems with knowing where to go, 69% reporting problems with medication availability, and 70% expressing lack of sufficient funds to purchase medicines from the private sector (Kassam et al., 2016a).

If public health researchers and policy-makers are to implement measures to improve malaria management in rural regions such as Butaleja, it is essential to have an understanding of key stakeholders involved in malaria management. While much is known about the formal public and private health systems, little is known about unlicensed retail drug outlets, particularly since the national effort in Spring 2011 to engage the private sector through the Affordable Medicines Facility-Malaria (AMFm) program (AMFm Independent Evaluation Team, 2012; Fink et al., 2014). Given that the district-wide studies revealed unlicensed retail drug outlets to play a central role in the management of fever for young children in Butaleja District, this exploratory research was undertaken to help shed light on vendors affiliated with such outlets in this region. This paper discusses vendors' perceptions of their practice and social

environment as it relates to malaria management. For the purpose of this study, unlicensed retail drug outlets are defined as mobile or stationary commercial settings, such as markets and shops, which sell antimalarials but are not registered with any government regulatory body and operate outside the purview of regulation, registration, or oversight by the government or other health or professional institutions.

2. Materials and methods

2.1. Research design

A qualitative design using face-to-face semi-structured interviews was used to explore unlicensed retail drug vendors' experiences with the management of malaria in the District of Butaleja, Uganda. The methodology is aligned with the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007). The study was conducted from August 1 to September 10, 2011, in 27 of the District's 66 parishes –designated as study sites for the larger district-wide research (Kassam et al., 2016b). Ethics approval was obtained from the University of British Columbia Behavioral Research Ethics Board (certificate number H10-02909) and the Uganda National Council for Science and Technology (certificate number HS 906). Participants were informed of their voluntary participation, and written informed consent was obtained prior to conducting the interview.

2.2. Study area

Butaleja District is predominantly a rural area located in eastern Uganda. The district is divided into 10 sub-counties and two town councils. The most recent National Population and Housing Census completed in 2014, estimated Butaleja's population at 245,783, with 44,311 household and a growth rate of 3.71% (Uganda Bureau of Statistics (UBOS), 2014). There is poverty throughout the district, with most households relying on subsistence farming as their main source of livelihood. As with the rest of Uganda, malaria is endemic throughout the region, affecting most of the population (Uganda Bureau of Statistics (UBOS), 2009). The district has one hospital and several health centers, with roughly half of the population requiring to travel more than 5 km to reach a public health facility (Uganda Bureau of Statistics (UBOS), 2009). Among the private drug outlets, a large majority consist of unlicensed drug shops (K Mweru, MD, District Officer, personal communication, April 2011).

2.3. Participants

The target population consisted of vendors who worked in unlicensed retail drug outlets located in 27 parishes across the 10 sub-counties. A census of private retail drug outlets in the select parishes enumerated a total of 108 private retail drug outlets: 20 formal (licensed) outlets and 88 unlicensed outlets. The census was completed with the help of local village council chairpersons, who at the time of the census informed the unlicensed vendors about the study. All 88 unlicensed retail drug outlets were subsequently visited by the local research team to invite their staff to participate in the interview. One vendor from each outlet was invited to participate if they met the inclusion criteria of having worked on the premise for at least 50% of the operating hours, agreed to participate, and willingly signed the consent form. Traditional practitioners and faith healers were excluded.

2.4. Data collection

Research assistants who were part of the larger district-wide research were utilized to conduct interviews with vendors in

their respective study sites. The interviews were conducted in English or in the local dialect of Lunyole by six research assistants who were fluent in both languages. All research assistants were trained in qualitative interview techniques at an intensive seven-day workshop consisting of face-to-face group work and field-based exercises. The interviews were held in quiet locations in or near the vendors' site of operation. Open-ended questions were used to gain insight into vendors' perceptions of their practice and social environment. These included: Tell me about your experience as a drug vendor when it comes to treating malaria in your community? Can you tell me your preferred source for learning how to treat malaria? Which sources do you prefer the least? If you were offered a training course, would this interest you and why? Open-ended, conversational probes were used to encourage vendors to expand on their thoughts and to clarify their responses. With the vendors' permission, interviews were audio taped, and research assistants chronicled both verbal and non-verbal communications. The research assistants transcribed all recordings within 48-h, with all interviews conducted in Lunyole translated to English. In order to ensure accuracy and completeness, senior researchers proof-read the interviews and cross-checked them with the audio-recordings.

2.5. Data analysis

Electronic transcripts were reviewed and coded with the assistance of QRS Nvivo (version 9.0) qualitative data management software. Transcripts were analyzed using thematic content analysis (Smith, 1992). Analysis began with first-level open coding, which consisted of analyzing the transcript line-by-line, dividing the text into meaningful units, and labeling each unit for higher-level analysis. Codes were then examined and compared for relationships, similarities, and dissimilarities, and subsequently re-categorized or clustered based on the differences and similarities. As themes emerged from the data, the codes were refined so that major themes could emerge, providing a coding frame for analysis. The credibility of the analysis was assured through group discussion and peer-checking with other members of the research team. Final themes were determined after at least two team members reached agreement. Illustrative quotes were extracted to represent recurring or dominant themes. Demographic information was entered into Microsoft Excel 2010 software to compile descriptive information about the sample.

3. Results

Altogether, vendors from 75 of the 88 unlicensed retail drug outlets consented to participate in the interview. Vendors from 13 outlets were unavailable despite two repeated attempts. Nearly two-thirds of those who participated were female (65.3%) and just over a third male (34.7%). Most (93.3%) vendors operated out of drug shops, with only a small proportion affiliated with mobile outlets, market stalls, or general shops. Just over half (56.0%) reported being both owners and shop attendants. While just under three-quarters (70.7%) of vendors had attained some level of post-secondary education, less than half (48.0%) had any health qualifications, and only 14% had qualifications to apply for operating a licensed drug shop. The outlets enrolled for this study sold western medicines to treat a range of childhood and adult ailments, including malaria, respiratory illnesses, gastrointestinal illnesses, and seizures.

Vendors' responses revealed five major themes: 1) their perceptions of their role in the community, 2) their perceptions of their ability to manage uncomplicated malaria in young children, 3) their challenges with day-to-day operations, 4) their views on how regulatory policies affected their ability to serve their communities,

and 5) their willingness to engage in future training programs. Each theme is discussed individually hereunder.

3.1. Vendors' perceptions of their role in the community

There was a general sentiment among vendors that the public health system within Butaleja was failing the community, with about one-third expressing the view that their presence met an important health care need within the District. According to vendors, households faced many difficulties when trying to get care for their children at health facilities. They spoke of caregivers of young children travelling long distances to reach health facilities, only to encounter lengthy wait times and frequently being redirected to private outlets to buy medicine because of medication stock-outs. Consequently, many households preferred to seek care at private outlets such as theirs over public health facilities.

No means [to get to them] and too far from these government health units [to walk]. [There] are very few of them; for instance, leaving this way at this time, going all the way to Nabiganda when a child is sick in that sunshine (hotness)." DV05

Unfortunately, very few people want to go to the health centres. Like for malaria, when you tell someone to go to the health centre, he tells you, "you want me to go and line up?" . . . sometimes when they go there, they find no medicine; so he brings a chit [prescription] and tells you this is the medicine they told me to buy. It is not there [at the health centre]. DV20

Vendors generally believed that most of their customers embraced their presence in the community and valued the care they provided. This appreciation by the community was commonly demonstrated, they said, through congenial relationships and the offering of positive feedback, gifts, and return business.

What I am so proud of is that I have gotten to know [the community] through this work. People now know me as so-and-so who treated us. That [person] treated us [well]. DV07

I get so many customers; they come to me because I am handling them very well and even the medicines - everything they want they can get. DV28

When I treated [the child] and she cured, she [the mother] comes and tells me that I have cured [her]. There is something she brings for me when she comes to appreciate; anything she has [like] an egg. DV63

However, a small proportion of vendors (n = 9; 12%) did say that relationships with community members can easily change from friendly to adversarial when treatment doesn't work as hoped. In such situations, tensions commonly arise between vendors and customers who accuse them of providing poor services and try to discredit their work.

There are people who talk ill of you, that you treat [their child], but you don't cure. All those they talk about you. DV05

There are. . . times when they come in need of you and you are not there [and they complain later]. DV13

Another person may want me to treat according to *his* knowledge, so when I refuse to work according to *his* knowledge, we get a misunderstanding and at times he quarrels. DV64

I treat someone's child, and they say you are the one who killed him. They say "I took him to that [person] and he is the one who killed my child". DV70

Vendors also noted that though they believed they had strong relationships with community members, they were not always suc-

successful at promoting optimal malaria control methods. Even during periods of acute illness, vendors reported that despite their best attempts, several caregivers of young children reverted to traditional home remedies, such as herbs, to treat malaria.

The child suffering from this illness for four days . . . the father has been only buying Panadol for him. . . I told him, “you delayed with the child; but you should have brought the child when it was still earlier”. DV06

There is a child I treated. I put a drip on the child; but the mother pulled out the drip and left the wound [vein] open. This led to the child extensive really running out of blood [losing a lot of blood], almost dying. It affected me a lot. . . DV03

People don't listen to advice that you will have given them. If you tell a person to make the child sleep in a mosquito net, [the] adult will be the one to sleep in the net and leaves the child without sleeping in the net. DV16

She [the mother] deceived me that she was going to go home and prepare [the medicine] herself. When she reached home, [others tell] her the child had things of [demons]. The child was having convulsions, so they remained at home doing things through demonic traditional healers [instead of giving the medicine]. DV20

3.2. Vendors' perceptions of their ability to treat uncomplicated malaria in children

More vendors expressed confidence in their abilities to treat uncomplicated malaria in children ($n = 36$; 48.0%) than expressed doubt. Vendors' also believed that the community was better off because of them. This belief was influenced by their observation that children they treated for malaria not only got better, but that they had prevented a negative outcome from the illness.

What I have seen that is so important in that for the time I have been here, no person has died on the way. DV10

People go on reducing in number in terms of falling sick in . . . the time I had just come. DV21

I was here and they brought a child from [the far-away village of] Lujche . . . the child was convulsing. When they brought the child they [were] scared, but when I treated her, the child got cured. DV24

While less common, about one-tenth of the vendors ($n = 7$; 9.3%) shared instances of children not getting better, despite their best efforts. Many of these failed cases involved vendors attempting to treat children whose illness had progressed, thereby delaying timely referral to a public health facility.

When I put that child on malaria treatment, within 30 min the convulsions started. We [tried to] treat the convulsions . . . we tried to control [for] the convulsions, [but the] convulsions persisted, and the child was referred to the hospital. [At] the hospital [the child] was put on a drip. The child was anemic [and] was transfused. The following day [the child] was still anemic and was there in the hospital for about two week and the child passed away. That is the worst experience I had. The child was very weak and [at] the last moment the child just passed away. DV12.

There was a patient they brought here. I used quinine and it failed. I changed to chloroquine [and] it also failed. . . The patient was taken [somewhere else] for more treatment. I referred the child. That one is not-good [experience I had]. DV56

One time I faced a certain scenario. I gave a child treatment and failed to improve and was referred to hospital. . . Unfortunately, the sickness worsened and unfortunately that child died. DV59

A few ($n = 12$; 16.0%) said they lacked the resources and knowledge to properly diagnose malaria.

I do not have a thermometer or a blood test. . . because I do not know how to use it. I have not be trained how to use them. DV04

For us in drug shops, we don't do blood [tests]. We don't have power [electricity] and blood has to be tested where there is electricity; so we can boil [analyze] it to see how it is. But in drug shops we don't test blood. DV05

I do not have the knowledge of how to get things that can help me confirm that truly what am treating is malaria. DV22

When someone is ill of fever, there is no way I can know that this is malaria or what this type of fever is. DV32

3.3. Challenges with day-to-day operations

Most vendors viewed themselves both as health care providers and as business people.

It was stated by several vendors that this dual role made it difficult to accommodate the needs of the community while ensuring their business remain profitable. Having two roles resulted in a number of operational challenges for them.

Vendors' identified poverty as being pervasive across the District, with most households not able to afford medicine from the private sectors. It was, therefore, common for customers to ask to buy on credit, and many vendors felt obliged to offer credit. However, repayment was a big problem, with almost half of the vendors ($n = 38$; 50.7%) indicating that many of their customers either defaulted on their payment or continually asked for longer payment periods. This created cash-flow problems and prevented vendors from replenishing their stock in time. This in turn affected their ability to expand their business, exacerbated the medication stock-out problems already existing at public health facilities, affected their relationship with the community, and made it difficult to retain their clientele; eventually, forcing many vendors into bankruptcy.

Payment is poor. People complain a lot about poverty; so they do not pay well. DV14

I give them credit, they do not pay me properly. . . We get losses because by the end of the year when I balance out the book, I may find that I have lost a lot of money in a year. I may have a loss of 200,000 shillings. That one also, the business does not grow. . . DV02

The problem of credit repayment was compounded by the rising prices that suppliers charge for the medicine. Almost one-third of vendors ($n = 22$; 29.3%) indicated that many of the medicines to treat malaria were too expensive for them to buy, and equally expensive for their customers purchase. Vendors, therefore, struggled between carrying sufficient stock to serve the community with running a successful business.

Where we obtain [medicines], they are now costly. Prices are high. DV05

You may want to increase the stock and even the services, [but] the profit margin is very small, and even the capital. DV07

Medicines are too expensive to buy, and on the other side you find that they go slow [are difficult to sell]. DV08

... [Someone] has come and wants quinine, and you tell her “I do not have”, and she tells you they have walked from far and thought [they would] find them here [at the drug shop]. DV36

The high prices of medicines also affect decision-making and care within households. About one-third of vendors (n = 21; 28.0%) suggested that many caregivers either delayed seeking malaria treatment for their children, opted for less effective or ineffective treatments, purchased partial treatments, or gave partial treatments and saved the rest for future use.

Tablets for malaria, they [suppliers] have hiked [the price], and people cannot afford that money to buy the treatment and finish a whole dose. DV21

The child suffering from this illness for four days ... the father has been only buying Panadol for him. ... I told him, “you delayed with the child, but you should have brought the child when it was still earlier”. ... [Also,] what I have seen, the first challenge is that community people are poor; then when they are poor, they do not buy. They cannot afford a whole dose for malaria. DV06

Others, when you give them medicines, they are not giving the medicines to the child. They give and stop, they do not complete dose, they save [what’s left]. DV11

3.4. Regulatory policies hindering service

Because of the illegal nature of their business, unlicensed vendors were constantly at odds with the National Drug Authority. Almost two-fifths (n = 33; 44.0%) of vendors viewed the existing regulations as punitive and disruptive to their business.

National Drug Authority came and took all my stock one time, and I had to start again. They wanted the district license. DV14

The National Drug Authority [can] come when you are not registered with them. They arrive and gather [your] medicines and go with it or sometimes they arrest you too. DV22

Many also questioned the National Drug Authority inspectors’ enforcement practices, characterizing them of being corrupt and victimizing.

[It’s the] laws [that affect us]. [The] license ... it is not [as simple as] going to pay for the license and [just] start working. They [the authorities] can make you work and work [give you the run-around], and what they want at the end is money. You find you cannot manage them, and yet you have wasted so much money [in the process]. DV21

There are those who come to steal medicines and there are those who come to steal money. DV70

The regulations are widely viewed by vendors as unreasonable. They perceived the regulatory restrictions to be an impediment to providing much needed malaria care in their communities. Vendors’ frustrations mostly centered on their inability to sell class C over-the-counter drugs, such as ACTs, and prescription drugs, such as, antimalarials and antibiotics. Some were even dismayed at not being able to legally provide injections.

We are limited by government. We are not supposed to use this and that. And that is why most services we cannot deliver to our people. The government limits us to do certain things. DV06

National Drug Authority - I have a problem [with them]. I don’t know what they want. They can come and tell you that such and such tablets, you’re not supposed to have them here; yet if they are not there, the patient will not [get a] cure. DV23

They come and find unlicensed drug dealers [vendors] in town and take their drugs [causing] a setback. Yet the government [wishes to] fight poverty. How shall we be fighting poverty [when] they are coming and impounding our drugs? I would request to at least reduce the impounding of the drugs; at least come talk to us, convincing us so that we license our drug shops. DV59

I do not sell to them Coartem [ACT] because the government refused us [unlicensed vendors] to have them. The government wants them [people] to obtain the Coartem and ACT from government centres. So, I feared to use them. DV74

3.5. A strong desire to provide the best malaria care

All vendors revealed a strong desire to provide the best malaria care possible, and all vendors but one indicated that they would be willing to participate in training opportunities to improve their knowledge, skills, and services. About two-fifths (38.6%) of vendors expressed that such training would enable them to improve their community’s health, and thereby give them a sense of purpose. Just over one-third (34.3%) reported that training would enhance their malaria-management knowledge and skills. About one-quarter (27.1%) indicated that training would improve their reputation and trust within the community and ensure job security. The following quotes highlight reasons for engaging in future training.

The reason why it interests me is that I would be saving the lives of our children and [other] people. DV31

I cherish the opportunity to go and learn more. It would be good. These people [the trainers] could give me more knowledge and new methods to inspire the way I treat. DV67

Maybe with a certificate or something [for] motivation...something like that ... can make me happy. I even gain confidence and the trust in the community as well as the government of Uganda. DV06

Vendors also spoke of the sorts of training programs that they would consider participating in. Short training sessions, such as workshops and seminars, were the most popular, mentioned by 89%. These were followed by formal courses and certification at post-secondary institutions (30.7%), and training delivered via the radio (25.3%). Less popular training methods included reading books, pamphlets, or newspapers (18.7% preference); studying on mobile phones (8.0% preference); hands-on training at public health facilities (8.0% preference); and mentorship by health professionals (5.3% preference). Of the three-quarters who indicated what distances they would be willing to travel to get to a training location, two-fifths (41.8%) said they would travel up to 5 km, one-third said they would consider between 6 km and 20 km, and one-quarter (23.5%) indicated they would travel up to 25 km.

4. Discussion

Childhood diseases, such as malaria, pneumonia, and diarrhea, are a major cause of illness in Uganda. In rural areas, such as Butaleja District, where the informal private sector is more prevalent than their formal private counterpart, a large proportion of caregivers rely on unlicensed drug outlets for essential treatment (Konde-Lule et al., 2010). Despite their prominence, there is a scarcity of studies describing unlicensed retail drug outlet vendors’ experiences in Uganda. This pioneering study explores vendors’ perceptions of their practice and environment in Butaleja District, Uganda. The findings from this study suggest that despite the day-to-day chal-

allenges faced by vendors, they consider themselves to be filling an important gap in the health delivery system.

There was a strong sentiment among the vendors that public health facilities in Butaleja were failing to provide the necessary medical services to the community. As has been reported by other studies investigating health system practices in Uganda, long distances, long wait times, limited hours of operation, inadequate staffing, and medication stock-outs were repeatedly mentioned as factors undermining care at these facilities (ACTwatch Group, 2013; Awor et al., 2012; Goodman et al., 2007; Kizito et al., 2012; Ministry of Health Uganda et al., 2012; Nsungwa-Sabiiti et al., 2005; Nuwaha, 2002; Rutebemberwa et al., 2009). Similar concerns have also been echoed by caregivers of young children in Butelaja, with many circumventing the public system in preference for the private sector (Kassam et al., 2016b). Given that unlicensed retail drug outlets are often the only place to purchase essential medicines and to receive health advice, vendors indicated that their presence filled a gap in the health delivery system.

While concerns have been raised in the literature about the quality of care provided at the unlicensed retail drug outlets, most vendors in this study had limited awareness of their deficiencies (Goodman et al., 2007; Sudhinaraset et al., 2013; Wafula et al., 2012). A majority of vendors were confident about their ability to treat childhood illnesses, such as malaria, with only a small proportion expressing concern about whether they had sufficient knowledge or resources to make proper diagnoses and treatment decisions. Accordingly, most vendors perceived existing regulations to be harmful, needlessly impeding them from delivering the much needed care in their communities. Their desire to play a larger role in the health delivery system reverberated throughout their accounts. Many also expressed a desire to be integrated within the formal health system, and indicated a willingness to undergo training to improve the quality of their care and to expand their services.

As with other sub-Saharan countries like Ethiopia and Nigeria, Uganda appreciates that realizing the national 2015 target for malaria and other childhood diseases depends largely on the availability of adequate health system infrastructure (Ministry of Health Uganda et al., 2012; United States Agency for International Development (USAID), 2016a, 2016b; 2016c). With the primary care system remaining the main network for delivering essential services and medicines, the Ugandan government in partnership with international donors has taken several steps to strengthen case management at this level. One such initiative is the Affordable Medicines Facility - malaria (AMFm) strategy, established in 2009 to increase the availability of low cost, quality-assured ACT from the formal private sector (Cohen et al., 2012). In addition to a price subsidy, the AMFm program provides training for staff affiliated with the formal private sector and promotes in-country branding and awareness campaigns (Fink et al., 2014). More recent research is now directed at promoting the use rapid diagnostic tests (RDTs) at formal private settings and exploring the feasibility of expanding the CHW-based iCCM model to include the formal private drug sector (Awor et al., 2014, 2015; Buchner and Awor, 2015; Chandler et al., 2011; Hutchinson et al., 2015; Mbonye et al., 2015). While these national public-private partnership have been important strides for urban and peri-urban settings in Uganda, not all of the private sector have been sufficiently engaged to benefit those living in rural and remote communities where formal private outlets are scarce (Fink et al., 2014; Opiyo et al., 2016; Tougher et al., 2012).

In regions where primary health care remains difficult for some to access, the quality of care by public health providers is inconsistent, the referral system is not functional, and caregivers are often reluctant to seek care from the formal system due to high cost and frequent stock-outs, there is still limited understanding of

how to scale-up the management of common childhood illnesses (Kassam et al., 2016c). Though unlicensed retail drug vendors are not recognized health providers, in many such communities they often are the first and main point of care. With malaria morbidity and mortality being largely preventable, there is a strong ethical rationale to explore solutions outside the mainstream health structures to meet the health needs of the most impoverished or isolated (Jamrozik et al., 2015). With this in mind, there have been global and national recommendations to strengthen and integrate all health stakeholders in an effort to improve equitable access to health care, particularly in severely underserved areas (Ministry of Health Uganda et al., 2012; Omaswa, 2006; World Health Organization (WHO), 2000). To this end, engaging the unlicensed retail drug sector in rural areas, which is largely financially independent, may offer an opportunity to scale-up coverage of essential health interventions (World Health Organization (WHO) et al., 2006).

Concerns about the quality of services provided by unlicensed retail drug outlets are certainly warranted, and necessary regulations and policies need to be upheld to safeguard communities (Chandler et al., 2011; Goodman et al., 2007). The experience to-date demonstrates that partnerships can be a powerful approach to building a robust primary care workforce to address issues of inequity (World Health Organization (WHO) et al., 2006). One prime example of an effective public-community partnership has been the use of CHWs in the delivery of iCCM. This model has set a precedent for involving lay people in entry-level care, at least in resource challenged communities, to supplement the formal health care workforce and improve access to basic primary care. Several short-term studies have shown that the use of CHWs within iCCM reduces morbidity and mortality from malaria, pneumonia, and diarrhea (Ajayi et al., 2008a). Unfortunately, the lack of funding to sustain the iCCM model supported by community health workers (CHWs) has made county-wide scale-up difficult (Awor et al., 2014; Bennett et al., 2014). This has left many living in rural areas, such as Butaleja, reliant on the unlicensed drug sector for health care.

Given the severely constrained public sector health budgets, public health leadership is required to spearhead strategic and novel interventions with unlicensed retail outlets whose vendors have the needed aptitude and are motivated to contribute to the larger good (Omaswa, 2006). However, if unlicensed retail drug outlets are to be effectively engaged, it will be critical to define feasible practice models with viable incentives, develop metrics to quantify desirable vendor characteristics, use validated training programs with close supervision and supportive structures, introduce comprehensive patient registries for quality assurance purposes, and offer financial subsidy to high-risk vulnerable populations (Strachan et al., 2014). While incorporating the unlicensed drug sector into the formal health system will not be easy, lessons learned from the iCCM and similar experiences suggests that under appropriate circumstances, well trained members of the lay public can satisfy an important health resource need in underserved communities. Future research and deliberations are needed to understand how best to involve this sector in order to utilize fully its comparative value and benefits.

As with any study, the findings from this study need to be considered in the context of potential limitations. The intent of this qualitative study was to gain insight into study participants' perspectives of their practice and social environment. The findings were, therefore, not intended to be generalized to all unlicensed vendors across the District or across Uganda. However, given that 85% of outlets from the 27 parishes participated in this study, this constituted a representative sample for the designated parishes, allowing findings to be generalized to this geographical region. Additionally, the large sample size did allow the researchers to explore vendor perspectives through multiple lenses. As such, findings from this study offer meaningful insights into vendors'

experiences and potential leverage points for engaging them and other vendors in future interventions.

5. Conclusion

Findings from this study suggest that unlicensed retail vendors view themselves as important players in the management of acute childhood illnesses in their communities, and believe that they deserve to be acknowledged, encouraged and supported. Large scale research in the rural District of Butaleja confirm that the private unlicensed retail drug sector fills an important vacuum in the management of childhood malaria, with many such outlets serving as a primary source for initial care and home-remedies. Paradoxically, communities where the informal health sector involvement is the greatest, are also where there is an absence of clear public health policies to effectively engage the informal sector. This preliminary research is intended to stimulate discussion on ethical issues associated with the management of malaria in underserved communities, and motivate future research on how best to modify existing regulations and practices to build capacity across health providers in regions that otherwise are marginalized from receiving critical health care and improved outcomes.

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None of the authors has any conflict of interest to declare.

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