






BMJ Open Uptake of community health care provision by community health entrepreneurs for febrile illness and diarrhoea: a cross-sectional survey in rural communities in Bunyangabu district, Uganda

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ABSTRACT

Objective To assess the uptake of services provided by community health workers who were trained as community health entrepreneurs (CHEs) for febrile illness and diarrhoea.

Design A cross-sectional survey among households combined with mapping of all providers of basic medicine and primary health services in the study area.

Participants 1265 randomly selected households in 15 rural villages with active CHEs.

Setting Bunyangabu district, Uganda.

Outcome measures We describe the occurrence and care sought for fever and diarrhoea in the last 3 months by age group in the households. Care provider options included: CHE, health centre or clinic (public or private), pharmacy, drug shop and other. Geographic Information System (GIS)-based geographical measures were used to map all care providers around the active CHEs.

Results Fever and diarrhoea in the last 3 months occurred most frequently in children under 5; 68% and 41.9%, respectively. For those who sought care, CHE services were used for fever among children under 5, children 5–17 and adults over 18 years of age in 34.7%, 29.9% and 25.1%, respectively. For diarrhoea among children under 5, children 5–17 and adults over 18 years of age, CHE services were used in 22.1%, 19.5% and 7.0%, respectively. For those who did not seek care from a CHE (only), drug shops were most frequently used services for both fever and diarrhoea, followed by health centres or private clinics. Many households used a combination of services, which was possible given the high density and diversity of providers found in the study area.

Conclusions CHEs play a considerable role in providing care in rural areas where they are active. The high density of informal drug shops and private clinics highlights the need for clarity on the de facto roles played by different providers in both the public and private sector to improve primary healthcare.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study included both survey data and mapping, using Geographical Information System (GIS)-based geographical measures.
- ⇒ In this district, several other general community health workers might have been present, although it is unknown if these persons were active in their role.
- ⇒ The mapping included in this study did differentiate between private and public health centres, but in the survey, we could not differentiate between the two.
- ⇒ The scope of our mapping did not include collecting more detailed information such as if the private providers were registered at the National Drug Authority and were licensed to dispense medication.

INTRODUCTION

Around the world, countries struggle with a shortage of trained health workers and insufficient public health facilities, especially in rural, resource-poor settings. As a result, many communities have insufficient access to essential primary healthcare. To improve access, the WHO promotes a community-based interventions model in which community health workers (CHWs) play a key role as first entry point into the formal health system.^{1 2} CHWs are selected from local communities and trained to diagnose, treat and refer people to the formal health system.^{3 4} The specific roles and capacities of CHW differs between countries and contexts.²

Between 2002 and 2006, Uganda started to implement its version of a CHW programme, whereby in each village multiple CHWs were trained, who would collaborate in Village Health Teams (VHTs). The Ugandan CHW



programme was designed to strengthen community capacity for health promotion and health service delivery.⁵ In 2010, the Integrated Community Case Management (ICCM) of childhood malaria, pneumonia and diarrhoea became part of the CHW programme.^{4,6}

While the potential benefits of CHW programmes are widely recognised, studies in Uganda and elsewhere consistently show that there are major problems with the functioning of CHW programmes in practice. A first challenge is retaining active CHWs. Over time, many CHWs become inactive or completely quit. A review by Lehmann and Sanders⁷ shows that attrition rates in volunteer CHWs can be as high as 77%. There are several reasons why they quit, such as poor working conditions, insufficient remuneration, lack of training, support and supervision and low job satisfaction.^{3,8} Another challenge is the poor or irregular supply of medicines, diagnostics and other products that CHWs need for their role.⁹ The lack of medicine and other supplies undermines the effectiveness and motivation of CHWs and leads patients to go elsewhere.^{4,10} Depending on a volunteer workforce may lead to diminishing motivation over time or a necessity to prioritise income-generating activities, prompting the exploration of alternative approaches.¹¹

In this study, we focus on a novel approach aimed at making CHW programmes more effective and sustainable, by using the principles of microentrepreneurship. In this approach, regular CHWs are trained to become community health entrepreneurs (CHEs) who continue their standard community health activities within the public health system, while making a modest income from selling basic health products, such as antimalaria medicine, oral rehydration salts (ORS), soap and fortified foods.¹² The CHEs thus become microentrepreneurs and purchase these products through a social enterprise and earn a margin on each product sold. The (non-profit) social enterprise that supports and supplies the network also earns a small margin, which is used to sustain the organisation, manage and deliver supplies, provide supervision, ensure quality control and train and supply new CHEs. The CHE approach has been implemented in Uganda since 2015, and in several other countries in the region. Uganda currently has over 7500 CHEs who are active in rural areas and supplied from a central warehouse in Kampala.

Two recent studies in Uganda provide some insight into the benefits of a social microentrepreneurship approach for organising CHW. The first study is a large randomised controlled trial, which showed a substantial reduction (27%) in child mortality in (semi)urban setting.¹³ A second, cluster-randomised cross-sectional cohort study showed higher use of modern contraceptives and more knowledge about sexual and reproductive health in communities in rural areas.¹² A recent scoping review which included nine other studies recommends social enterprise as a viable model for providing primary healthcare in resource poor areas.¹⁴

While the CHE approach offers a promising model for strengthening primary healthcare in resource-poor settings, little is known about the extent to which households actually use the services provided by CHEs. Insight into the use of CHE services by rural communities may be used to better implement the approach, complement existing providers and strengthen efforts to improve accessibility to those who need it most. In order to contribute to this understanding, we set out to assess to what extent households in rural Uganda use the services provided by CHEs. We chose to focus on febrile illness and diarrhoea as these are part of the ICCM and remain very serious health problems for children under the age of 5.^{15,16} Febrile illness and diarrhoea require timely and appropriate treatment and access to the basic community health services and medicine provided by CHWs.^{9,17} Second, we mapped all other providers of basic medicine and primary health services in the communities in which CHEs are active.

METHODS

Public and private actors of Uganda's community health system

Uganda's general health system operates with public and private healthcare providers.¹⁸ Actors of the community health system include licensed public actors, consisting of hospitals, health centres and CHWs (in Uganda known as VHT workers). CHWs serve as first-line healthcare providers, bridging between village communities and health centres. Other specific roles of CHWs include conducting home visits, managing malaria, diarrhoea and pneumonia among children under 5 years, distributing health commodities and conducting referrals to health facilities.^{19,20} According to the Ugandan government's health policy, each parish (estimated average of 5000 people) has at least one health centre level II facility, led by an enrolled nurse and each subcounty (estimated between 20 000 and 30 000 people) has at least one health centre level III facility, led by a senior clinical officer. The community health system in Uganda operates at parish level, the smallest unit of local government consisting of several villages. Each village in Uganda is recommended to have on average four to five CHWs.^{5,6}

The public healthcare providers are supplemented by several licensed actors, who work on a private basis. Private clinics have self-employed medical staff, who operate a health facility and provide out-of-pocket services. Pharmacies sell treatments, usually on doctors' prescription, to patients. The responsible pharmacist is trained and licensed to provide medical services regarding drug distribution and usage. Drug shops are small 'walk-in' healthcare shops that in general sell over-the-counter drugs. In areas where Healthy Entrepreneurs (HE) is operating, the last private actor in the community health system is the CHE. The CHEs are regular CHWs who are trained to operate their own 'shop' with medical services. Instead of providing patients with governmental supplied and

financed products, they sell their treatments with minor profit. The HE community health entrepreneurship programme is described in detail elsewhere.¹²

Study site

The study site was the Bunyangabu district in Western Uganda. This district was selected through purposive sampling as this district was thought one of the best performing areas of the HE programme (based on ordering and selling of HE products), allowing to assess its optimal performance as an actor of the community health system. To reach the research' objective, this study was conducted in villages where at least one of the general CHWs was trained and active as a CHE.

Bunyangabu district is 477 km² in size with a total population of approximately 195 100, of whom 64.7% live in rural areas.^{21 22} Fort Portal Hospital serves as the Regional Referral Hospital for Bunyangabu and surrounding districts.²³ The district is rural and hilly with numerous crater lakes. This study took place in 6 parishes (Kabale, Kaini, Kabonero, Kisomoro, Kiyomiya and Nyakatonzi) and 15 villages, where active CHEs were known to live and work (Kangoma, Nyabusese, Bugungu, Kaina C, Kaina B, Kabonero A, Nyamba A, Busamba 2A, Kitunga B, Kabunono, Bunyamukongo, Nyakatonzi, Nyakisi, Kabale TC, Nyakigumba). Each village had one known active CHE; one larger village (Kabunono) included two known active CHEs.

Study design and participants

A cross-sectional survey was performed among 1265 randomly selected households. A household was defined as a person or group of persons (whether related or not) who live together in the same house and shared the same food bowl for the past 3 months.²⁴

In every village that was included in the survey, approval of the local council chairmen was required before starting the data collection. As the local council chairmen are well known in both the parish and the village, every chairman was asked how many households resided in their villages. In combination with the preset target of a minimum of 80 households per village (striving for a minimum of 1200 households in total), a skipping pattern was determined based on how many households were living in the village. On the basis of consecutive enrolment, all willing households were included starting from the first household in a specific village. The interviewers used a skip-pattern technique to cover different parts of the village, in a clockwise direction, without crossing rivers.

Eligible participants were adults (18 years or older). Participation was voluntary and informed consent was obtained prior to the interview. For each household, all questions were answered by one person within the household. A consecutive inclusion was used to determine the participant. Preferably, the mother of the household was interviewed, assuming she knows most about the household. When the mother was not present, it was checked if someone in the following order was present to answer

the survey: the father, grandparents, another adult living in the household or one of the oldest children. If no adult was present, it was continued to the next house, and no returns were made. Participants were ideally surveyed at home, but due to the harvest season, individuals who were working in nearby fields were surveyed there or were asked to briefly return to their homes.

Survey

The survey (see online supplemental file 1) contained demographic questions (household size, age of the household members (in categories), highest level of education and sources of income in the household) and questions related to the occurrence of, and seeking care for, fever and diarrhoea in the past 3 months among household members in different age categories (children under 5, children 5–17, adults 18–45 and adults 45+ years of age).

If at least one person per age category was reported to have had fever or diarrhoea in the last 3 months, subsequent questions included whether care was sought, whether care was sought from the VHT (known CHE) in their village (and whether medication was obtained) and/or whether care was sought from other community health providers for the reason of fever or diarrhoea reported. Note that CHEs are known as VHTs; community members may or may not know whether a VHT has been trained as a CHE.

A researcher from the authors institute, in Kampala, translated the survey from English into the local language Runyakitara, prior to data collection. Back translation was conducted by other members from the research team to confirm validity in both languages.

Data collection

Data were collected in April and May 2022 using a tablet-based household survey, using the offline-working KoBo toolbox application. When a safe internet connection was available, data was uploaded. Interviews were conducted by trained Ugandan research assistants, who spoke the local language. Data was checked for completeness at the end of each day of interviews.

Data analysis

Descriptive analyses were conducted with IBM SPSS, V.26 to explore the occurrence and care sought for fever and diarrhoea in the last 3 months by age group in the households. Options of community health services sought included: CHE (by respondents referred to as VHT), health centre or clinic (public or private), pharmacies, drug shops and other (including herbal and traditional methods). As some respondents used the word 'health centre' and 'clinic' interchangeably, we combined these into the category 'Clinic (public or private)'.

Mapping healthcare providers

The mapped healthcare providers in the villages where the household survey took place consisted of the actors of the community health system. As local council chairmen were asked to: (1) identify the villages in the parish,

(2) identify and locate all CHWs in the village and (3) locate all other healthcare providers in the village. Subsequently, the CHWs were asked to identify and locate all other CHWs and healthcare providers in their village. At the location of the identified provider, the input smartphone application was used as mapping tool. QGIS software (V.3.26) was used to create the map and calculate the number of other care providers in the direct vicinity (1, 3 and 5 km radius) of the 16 active CHEs included in the survey. The residence of the selected CHE was used as a proxy of the centre of the village. Open Street Map was used as the background layer of the map. The WHO recommends that for optimal access everyone should live within 5 km radius to a health facility, as such, this maximum radius was investigated.²⁵ However, as we found a high density of providers in the area, and a large overlap between the 5 km buffers, we also investigated a 3 km and 1 km radius.

A list of all public health centres in the district was retrieved from the District Health Office. GPS locations were searched on the internet and were included in the mapping. The health centres in the study area included level II and III facilities, mapped as 'public health facility'. A mapping strategy was developed to include all other existing community healthcare providers, that is, other CHE's, general CHWs (active or inactive), drugs shops, pharmacies and private clinics (regulated or unregulated). Mobile drug shops were excluded from the study as they are not permanently present in the villages.²⁶

Patient and public involvement

None.

RESULTS

A total of 1265 households were included in the survey. The majority of respondents were mothers (62.9%; n=796) and fathers (21.7%; n=275). Over 80% of households (n=1024) reported subsistence farming as one of their sources of income, 45% (n=572) had small businesses and a smaller proportion (11.6%; n=147) had salaried jobs. Further household characteristics are described in table 1. The mean household size was 5.1 persons (SD 2.5). Among all households, 770 had at least 1 child under 5, 965 had 1 or more children in the age group 5–17, 1039 included at least 1 adult 18–45 and 579 included at least 1 adult age 45+ years.

Table 2 describes the occurrence of fever and diarrhoea in the last 3 months by age category. Among the 770 households with children under 5, 526 (68.3%) reported that 1 or more children in this age category had fever and 323 (41.9%) had diarrhoea in the last 3 months.

Among the 965 households with children aged 5–17 year of age, 552 (57.2%) reported that 1 or more children in this age category had fever and 126 (13.1%) had diarrhoea in the last 3 months.

Among the 1039 households with adults in the age group 18–45, 490 (47.2%) reported that 1 or more adults had fever and 98 (9.4%) had diarrhoea in the last 3 months.

Table 1 Household characteristics

Total	Households	N	%
		1265	100
Respondent	Mother	796	62.9
	Father	275	21.7
	Grandparent	66	5.2
Household size	Adult child or relative	128	10.1
	1–3 persons	358	28.3
	4–6 persons	583	46.1
	7–10 persons	294	23.2
Households with individual(s) in age category (non-exclusive categories)	11+ persons	30	2.4
	Children under 5	770	60.9
	Children 5–17	965	76.3
	Adults 18–45	1039	82.1
Highest level of education in the household	Adults 45+	579	45.8
	No education	69	5.5
	Primary education	607	48.0
Sources of income in the household (one or more)	Secondary education	492	38.9
	Tertiary education	97	7.7
	Subsistence farming	1024	80.9
Sources of income in the household (one or more)	Salaried job	147	11.6
	Small business	572	45.2

Among the 579 households with adults age 45+ years, 261 (45.1%) reported fever and 42 (7.3%) reported diarrhoea in this age category in the last 3 months.

Care-seeking choices for fever and diarrhoea

Table 3 describes where care and/or treatment was sought for fever and diarrhoea for the different age groups.

Table 2 Reported occurrence of fever and diarrhoea in the last 3 months by age group

Households with at least one individual in age group	Total	Fever in last 3 months		Diarrhoea in last 3 months	
		N	%	N	%
Children <5	770	526	68.3	323	41.9
Children 5–17	965	552	57.2	126	13.1
Adults 18–45	1039	490	47.2	98	9.4
Adults 45+	579	261	45.1	42	7.3

Table 3 Care sought for fever and diarrhoea in the last 3 months by age group

	Fever in last 3 months, n (%)				Diarrhoea in last 3 months, n (%)			
	Children under 5	Children 5–17	Adults 18–45	Adults 45+	Children under 5	Children 5–17	Adults 18–45	Adults 45+
Total	526	552	490	261	323	126	98	42
No care sought	2 (0.4)	6 (1.1)	10 (2.0)	8 (3.1)	43 (13.3)	8 (6.3)	19 (19.4)	7 (16.7)
Care sought at CHE*	182 (34.6)	163 (29.5)	122 (24.9)	62 (23.8)	62 (19.2)	23 (18.3)	5 (5.1)	4 (9.5)
Care sought at Clinic (public or private)*	132 (25.1)	167 (30.3)	134 (27.3)	72 (27.6)	42 (13.0)	19 (15.1)	15 (15.3)	5 (11.9)
Care sought at local drugstore*	316 (60.1)	301 (54.5)	268 (54.7)	146 (55.9)	148 (45.8)	57 (45.2)	44 (44.9)	16 (38.1)
Care sought other*	4 (0.8)	11 (2.9)	14 (2.9)	4 (1.5)	50 (15.5)	25 (19.8)	18 (18.4)	11 (26.2)
Care sought at CHE	182	163	122	62	62	23	5	4
Medication received at CHE								
Don't know	1 (0.5)	1 (0.6)						
No, medication not available	14 (7.7)	6 (3.7)	7 (5.7)	4 (6.5)	4 (6.5)	2 (8.7)		
Yes, for free	7 (3.8)	8 (4.9)	4 (3.3)	6 (9.7)	5 (8.1)	4 (17.4)	1 (20.0)	
Yes, paid	160 (87.9)	148 (90.8)	111 (91.0)	52 (83.9)	53 (85.5)	17 (73.9)	4 (80.0)	4 (100)

*With or without also seeking other care (multiple options).
CHE, community health entrepreneur; Other, including herbal and traditional methods.

For children under 5 years with fever, care was sought in 99.6% (n=524/526); for diarrhoea care was sought in 86.7% (n=280/323). For children aged 5–17 years, care was sought for fever in 98.9% (n=546/552) and for diarrhoea in 93.7% (n=118/126). Among the two adult groups, individuals aged 18 to 45 and those aged 45 and above, the percentage of individuals seeking care for fever was 98.0% (n=480/490) and 97.0% (n=253/261), respectively. For diarrhoea, this percentage was lower, 80.6% (n=79/98) and 83.3% (n=35/42), respectively.

For those who sought care, the CHE was consulted for fever, with or without also using other services for 34.7% (n=182/524) of children under 5, for 29.9% (n=163/546) of children 5–17 and for 25.1% (n=184/733) of all adults over 18 years of age.

For diarrhoea, the CHE was consulted, with or without also using other services, for 22.1% (n=62/280) children under 5, for 19.5% (n=23/118) children 5–17 and for 7.0% (n=8/114) of all adults over 18 years of age.

Among those who sought care from a CHE for fever, medication was received for 91.8% (n=167/180) of children under 5, for 95.7% (n=156/163) of children 7–18, for 94.3% (n=115/122) of adults 18–45 and for 93.5% (n=58/62) of adults 45+. Overall, 95.0% (n=471/496) of all medication received from the CHE for fever was paid for.

Among those who sought care from a CHE for diarrhoea, medication was received for 93.5% (n=58/62) of children under 5, for 91.3% (n=21/23) of children 7–18, for all adults 18–45 (n=5/5) and for all adults 45+

(n=4/4). Overall, 88.5% (n=78/88) of all medication received from the CHE for diarrhoea was paid for.

Figure 1 further illustrate the (combination of) different services sought for fever and diarrhoea by age group.

Among those who did seek care for from a CHE for fever for children under 5, children 5–17 and adults over 18, 54.4% (n=99/182), 66.9% (n=109/163) and 73.9% (n=136/184), respectively, sought care from the CHE only, without seeking care elsewhere.

Among those who did seek care for from a CHE for diarrhoea for children under 5, children 5–17 and adults over 18, 82.3% (n=51/62), 82.6% (n=19/23) and 100% (n=8/8), respectively, sought care from the CHE only, without seeking care elsewhere.

For children under 5, children 5–17 and adults over 18 with fever for whom medication was received from the CHE, 59.3% (n=99/167), 70.8% (n=109/154) and 78.6% (n=136/184), respectively, did not seek other care then from the CHE only (data not shown in table).

For children under 5, children 5–17 and adults over 18 with diarrhoea for whom medication was received from the CHE, 87.9% (n=51/58), 90.5% (n=19/21) and 88.9% (n=8/9), respectively, did not seek other care then from the CHE only (data not shown in table).

For those who did not (only) seek care at a CHE, local drug shops were most frequently used services for both fever and diarrhoea, followed by health centres or clinics in all age groups.

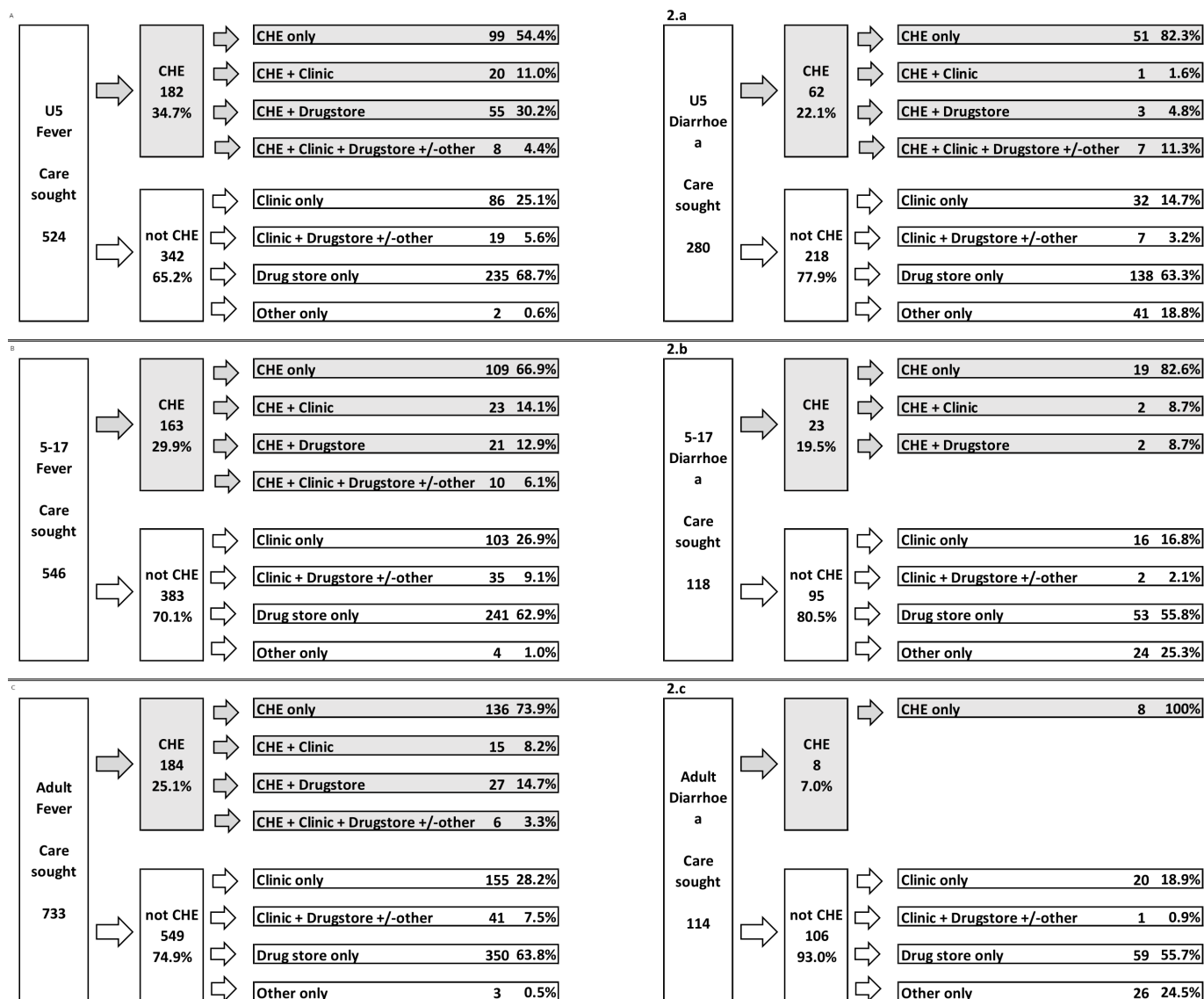


Figure 1 Schematic representation of care-seeking trajectories for fever and diarrhoea. CHE, community health entrepreneurs; Clinic: public or private; Drugstores: unregulated; Other: including traditional or herbal methods; U5, children under 5 years.

The map (figure 2) illustrates the location of the different services available in the proximity of the 16 CHEs.

The online supplemental table describes the number of different services available in the proximity of the active CHEs residing in the villages where the household survey took place.

Within a 1 km radius of the 16 active CHEs included in the household survey (see map), there were 8 (50%) with 1 other CHE, all 16 with 1 or more (median 3) general CHWs, 3 (18.8%) with 1 public health facility, 5 (31.3%) with 1 or 2 private informal clinics and 12 (75.0%) with one or 2 drugstores within a 1 km radius of the active CHE's.

Within a 3 km radius of all 16 active CHEs, there were at least 3 other CHEs (median 6), at least 8 general CHWs (median 14) and at least 2 drugstores (median 6). There were 14 (87.5%) with 1 (n=10) or 2 (n=4) public health facilities and 1 with 2 registered pharmacies.

From each CHE, there was at least one public health facility (median 3) within a radius of 5 km. Only half (n=8) had a registered pharmacy within a radius of 5 km (data not shown in table).

DISCUSSION

In this study, we examined to what extent household members with febrile illness and diarrhoea in rural Uganda use the services provided by CHEs. In addition, we mapped all outlets at which medication could be bought and all providers of health services in the communities in which the CHEs were active.

The results show that a large proportion of households in the rural villages sought primary healthcare for febrile illness and diarrhoea in the last 3 months and that CHE services were used by the community at large. As expected, fever and diarrhoea occurred most frequently among children under 5. Among households in which a

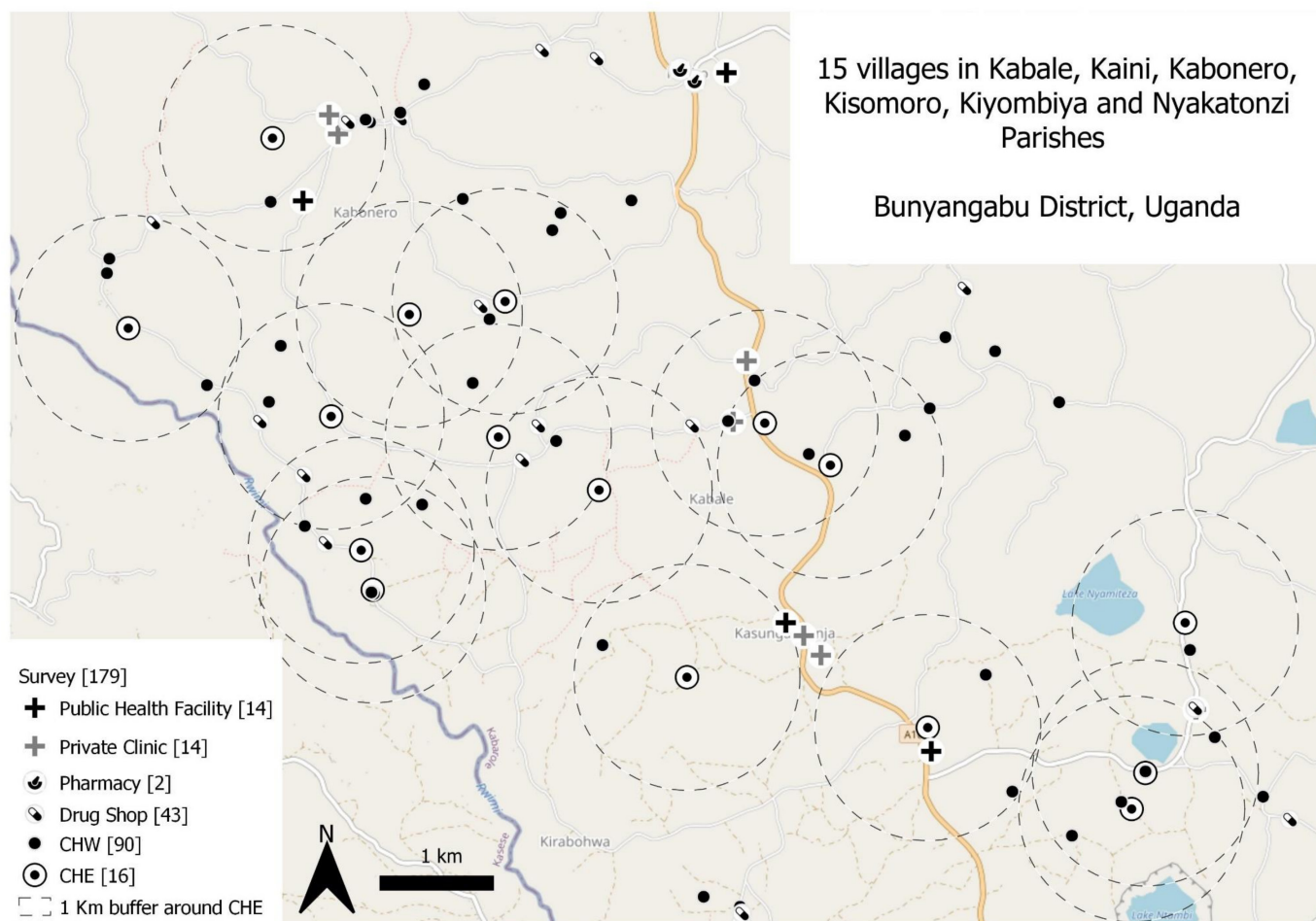


Figure 2 Map of providers of basic medicine and primary health services in the study area.

child under 5 had fever, 35% used the services provided by a CHE. The use of CHE services for fever among the other age groups (6–17, 18–45 and 45+ years) ranged from 24% to 30%. When care was sought for diarrhoea, CHE services were used ranging from 5% for the oldest age group to 19% for children under 5. Local drug shops were the most frequently used (for both fever and diarrhoea and in all age groups). Many households used a combination of different services, which was possible given the high density and diversity of providers in the study area.

An interesting finding from our study is that CHEs are visited relatively frequent for fever and diarrhoea compared with regular CHWs in another study in the same setting.⁹ A possible reason that patients are more likely to visit CHEs is that the majority obtained medication. Although on paper, regular CHWs should be provided with some basic medications, in practice they have not been provided with them for years.²⁷ If medicines are not available at the CHW, patients must get them elsewhere. Patients indicate that the lack of medicines is a reason to ignore CHWs and turn to other providers, such as stores that sell medicines.⁹

Another finding is the large number of drug shops and private clinics in the study area, many of which were

used by the households that were interviewed. The large number of shops at which medicine are sold and the array of private clinics can only exist because there is a demand for what they have to offer. The WHO recommends that for optimal access to primary health services, everyone should live within 5 km radius to a health facility.²⁵ In the rural villages that we surveyed, we found many informal drug shops and private clinics already within a radius of 1 or 3 km.¹⁴

While their services and products may contribute to community health, there are also concerns about the quality and appropriateness of what these many private actors provide. A recent study in Uganda showed that, while private providers are better stocked with medicine, compared with public entities, basic treatment guidelines, diagnostic equipment and knowledge about appropriate case management are insufficient.²⁸ Another study showed that regular CHWs tend to offer the highest level of appropriate treatment for children with suspected malaria, diarrhoea or pneumonia compared with public health facilities and private sector. However, people preferred to use private sector because medication was available here.⁹

A major concern about the stores and private clinics that sell medicine is that their products come from the



unregulated supply chain and are more likely to be expired, substandard or even falsified. Medicine shortages in the public sector drive patients to these drugstores and illicit medicine sellers, which thrive on lax oversight.^{29 30} CHEs do obtain medicine from a transparent and regulated supply chain and thereby plays an important role in safeguarding the supply of high-quality basic medicines as it contributes to resilient quality-controlled supply chains in rural areas. In addition, this CHE approach provides adequate supervision and continued training needed to ensure high quality performance of the CHWs.^{3 19 31}

CHEs offer a promising hybrid alternative, as they are trained as CHWs and formally are part of the public health system, while the social enterprise which supports them ensures that there is a sustainable supply chain providing them with the essential medicines and products such as malaria tests and ORS.

Previous research has shown that government investments in public health services in Uganda are inadequate and CHW programmes are more reliant on donors and (non-governmental organisation (NGO)) implementing partners.^{9 30 32} This highlights the potential for the CHE approach to overcome this challenge and create a financially sustainable model to deliver primary care to rural areas. At the same time, it should be clear that government remains responsible 'to provide the highest possible level of health services to all people in Uganda through delivery of promotive, preventive, curative, palliative and rehabilitative health services at all levels' as described in the mission statement of the Ministry of Health.³³ Government should therefore be aware of the presence and de facto roles played by different providers in both the public and private sector in order to articulate a clear vision of these roles and their responsibilities and effectively implement a variety of steering mechanisms.

Strength and limitations

The strength of this study is that survey data was combined with mapping, using Geographical Information System (GIS)-based geographical measures. In this district, several other CHWs might have been present, although it is unknown if these persons were active in their role as CHW. Unpublished data shows that general CHWs are sometimes only temporarily active for specific health promotion campaigns. Therefore, in this study we were not able to differentiate between general CHWs and CHEs as households often do not know if their local CHW has been trained as a CHE. However, as several studies have indicated that CHWs were without supplies or never received (basic) medication,^{27 34} and households in our study did obtain medication and products from their CHW it was most likely that the households made use of the services of a CHE. Another limitation was that the mapping included in this study did differentiate between private and public health centres, but in the survey, we could not differentiate between the two. The scope of our mapping did not include collecting more detailed information such as if the private providers were registered

at the National Drug Authority and were licensed to dispense medication. The study was conducted in a rural community where only lower-level health facilities are situated and there were no traditional healers identified as healthcare providers in this study area. We did not aim for this study to be representative for the rest of the country (nor for other countries where HE is operating).

Further research

There is a need for more in-depth research into the interaction between public health and private sectors as well as the role of CHE approaches in this interaction.¹² This includes an exploration of potential regulatory integration of different providers for delivering primary care with trained staff and good quality medicines and services. This medical pluralism needs to be explicated so that the first point of contact is identified and the referral system and reasons for referral from one provider to another be identified.

Simultaneously, more research regarding the potential role of CHE approaches to complement the public health system in local communities is needed, including the role of CHEs in a life-course approach with an added non-communicable disease focus. More evidence about better diagnoses, treatment, and drug quality may improve the reputability of CHEs and thereby increase trust and awareness of communities. This may in turn lead to CHEs being truly able to fulfil their CHW role as first point of access with prompt and appropriate treatment available. In addition, it would be worthwhile to explore whether the quality of medicine and services is better from regulated social enterprises than unregulated local community health providers.

CONCLUSION

This study examined the community perspective on services provided by CHEs for febrile illness and diarrhoea in rural Uganda. Our findings showed that CHEs play a considerable role in delivering primary healthcare including the provision of medication for fever and diarrhoea in the rural areas in which they are active. It also showed that there is room for improvement in reaching the full potential for CHEs as first point of access to primary healthcare in rural communities, as there was a high density of informal drug shops present. As government remains responsible for primary healthcare, more clarity on the de facto roles played by different providers in both the public and private sector is needed to make informed decisions on how to allocate resources and improve primary healthcare.

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Contributors Conception and design of the work was conducted by MvdH, MvL and MOK. MvdH, MvL, PB, TH, ER and RT contributed to data collection. Data analysis and interpretation were done by MvdH, MvL, PB, TH, ER, RT and MOK. MvdH and MvL drafted the first version of the article. Critical revision of the article was performed by MvdH, MvL, PB, TH, ER, RT and MOK. MvdH, MvL and MOK act as guarantor. All authors approved the final version to be submitted.

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Competing interests None declared.

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Ethics approval This study involves human participants. Ethical approval was received from the Higher Degrees Research and Ethics Committee of Makerere University School of Public Health and the National Council for Science and Technology (SPH-2022-248). Written informed consent was obtained from all respondents that were willing to participate prior to survey administration. By the use of a standardised script, the respondents were assured that their identities would be kept confidential and anonymised and the participation is voluntary based, which means they could step out of the research process at any time. Also, the respondents were guaranteed that the gathered data from the investigation will be used for research purposes only. The completed forms were stored in a location only accessible to the principal investigators of the study. The data is stored password protected on computers. Participants gave informed consent to participate in the study before taking part.

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