RESEARCH INSIGHTS

# Digitizing Community Health in Kenya

## Insights from Community Health Volunteers[1]

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## Background and Policy Context

Recent years have seen the rapid incorporation of digital health systems, including in low and middle-income countries (USAID, 2020; Duggal et al., 2022; Alunyu Egwar et al., 2023). The transition from paper to digital data collection and storage has opened up avenues for new, potentially cost-effective ways of delivering healthcare (Craig et al., 2022). Global and regional bodies already promote the adoption of technology to realise universal healthcare, including the World Health Organization (2019) and East African Community (2018).

Kenya has been replacing paper with digital systems accordingly (Kang'a et al., 2017, Meru and Kinoti, 2022) in a context where healthcare is devolved. Essential services were transferred to County Governments under the new 2010 constitution, with a revamped four-tier structure (Masaba et al., 2020). The first tier includes community health services, whereby Community Health Workers (CHWs), referred to until 2023 as Community Health Volunteers (CHVs), provide primary care to households (Hussein et al., 2021).

As a major intervention towards achieving Universal Health Coverage (UHC) by 2030, the Kenyan government launched its first e-health strategy and unit in 2011 (Manya et al., 2012), developing its own digital platform with partners. The National Health Policy 2016-2030 and Kenya Health Policy 2014-2030 concretized the drive to invest in e-health. Strategies for community health, via the electronic Community Health Information System eCHIS followed, with the aim of digitizing all ~100,000 CHVs in Kenya (Ministry of Health, 2021).

Isiolo County, one of four selected for Kenya's UHC pilot in 2018, was the first county-wide digitized Community Health Information System pilot (i.e. introduced without phasing), facilitated via a partnership between the Ministry of Health, Isiolo County and US non-profit Living Goods (LG). The Isiolo case was unique in that there was considerable oversight, investment and control by LG. Further, Isiolo County temporarily reverted to the paper-based system due to technical challenges, reintroducing paper ledgers in May/June 2023 before resuming digitization later that year. While this highlighted some risks in the transition, it also demonstrated both to CHVs and communities what was at stake in losing the advancements digitization had brought. This brief was developed from frontline experiences of CHVs in Isiolo, explored through in-depth interviews, focus group discussions (FGDs) and observations at a key time in Kenya's digitization transition.

## Methodology

This brief stems from a four-year project funded by Wellcome Trust, run by the University of Edinburgh in collaboration with the University of Nairobi (2021-25). The project comprised life history interviews and observations of CHVs at work April 2022-March 2023 across Isiolo's sub-counties: Isiolo, Garbatulla and Merti. The county was selected due to its inclusion in the UHC pilot, challenging operational environment and the presence of private actors. In 2019, ~750 CHVs were supplied with mobile phones with a digital platform to replace paper systems as part of a four-year co-financed project with LG. Serving more than 40,000 households, CHVs used this system to collect and share individual and household information for four years.

## Key Messages

- The first full, **county-wide digitization** pilot took place in Isiolo 2019-2023, with ~750 CHVs equipped with smartphones and training to capture health data, monitor patients and help with referrals
- The system was **overwhelmingly well-received**, with improved data quality, traceability, ease/discreteness of phone use and ready acceptance from communities allowing for its rapid adoption
- CHVs reported **work intensification** during the pilot, as well as new digital pressures, given for example the daily stream of notifications, reminders and intensive performance tracking
- **Digitization is changing health work**, particularly skewing work towards data production. Some report more intrusive and repetitive questions to patients; others a much improved healthcare encounter
- Key challenges to implementation stemmed from **differing priorities** of government and non-government actors at different levels, technical issues and data management gaps
- CHVs were **uncomfortable with parallel recording** when using manual and electronic systems simultaneously, resulting in duplications as well as new or renewed frictions with communities
- CHVs could find themselves **penalised for system/device failure** or extreme environmental conditions, as in Isiolo, which feels unfair and demotivating
- We recommend **in-depth, qualitative research alongside eCHIS** roll-out so as to understand the work experiences and challenges of both CHPs and community members.

[1] In April 2023, the Government of Kenya announced CHVs would henceforth be known as Community Health Promoters (CHPs) but we retain the term CHVs for the majority of this brief for continuity with our data collection period.

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Given the team's access and trust built over a year and the timeliness of the topic, the team conducted six FGDs specifically on digitization in March 2023. Groups were divided by gender - three male three female - after earlier observations on the dynamics of mixed groups and across peri/urban/rural areas. Our primary focus was on gathering the perspectives of CHVs, although broader opinion was gathered from government health staff.

## Results

### Benefits of digitization

Overall, CHVs (as other health cadres in Kenya) conveyed their strong appreciation of the benefits of the digitized system. These included: ease and security of collecting/sending data; visits, follow-up and compliance notifications; tracking performance; discretion and ease of use:

> We're grateful that we shifted from analogue to digital. First, it is easy to send data using the phone. Secondly, it guides you on who to visit next […]. Thirdly, it is easy to sync our monthly report. Once you are done collecting the information, you sit down and sync and then it is reflected on the dashboard. (FGD, urban male)

> I think it's better we continue using the phone because of the safety of information. You know if we go back to analogue: most of the information was getting lost. (FGD, peri-urban female)

> There was a huge workload with the analogue system. Carrying those books and medical supplies was quite heavy…if you go to the community and start reading the ledgers with all the questions to the head of the household, it takes a really long time so that is a challenge. (FGD, rural male)

Additionally, the less obtrusive mobile system allowed for smoother interactions with community members:

> When I come with the phone, I will not ask the names. I will ask, how is the child fairing? Because I already have the names. If I have the register, I will ask all sorts of questions like the name and age of that person, even if I know. They will tell me I am benefiting on their behalf, so I just want the phone. (FGD, urban female)

These positives are not unqualified, however, with some CHVs suggested the contrary vis-à-vis data quality and community relations, resonating with observations of monthly meetings and comments by health staff:

> I'm of the opinion that analogue was better than digital because we used to go household to household, then we were supervised every week. Now that we have phones, we forge data….When we were using the register, we used to input the individual's number, the one in that household. Nowadays they just call to ask if CHVs have paid them a visit…. you can go somewhere with a phone and cook data and say you've supervised that house. They will believe you because they will see it indicated that you visited. Personally, I think analogue is better than using the phone. (FGD, rural female)

> The work is difficult because once some women see that phone, they immediately know today is the day for questions. Someone will tell you to come tomorrow or in the evening. You have to go back another time. (IDI, Feb 2023, female)

### Work Intensification

Some CHVs found their role more challenging due to unforeseen extra duties, including: new or renewed household registrations; drives on particular indicators (often at the urging of partners); long distances for some to conduct visits more frequently; additional reporting indicators such on COVID-19; constant reminders.

> With this kind of work…with the phone, the work has intensified. (IDI, June 2022, female)

> It takes a lot of time because once you get to a household; you have to finish with it first before proceeding to the next. It becomes difficult to visit three or four houses. At times it becomes so stressful as you are told to visit 15 households during the day…before you are done with the 15 households its already night time and you are still on the road…you do this so that you make sure the report is sent! (IDI, April 2022, female)

In what we began to term 'technostress', the digitization of community health has led to new demands for CHVs that affect their broader lives, such as constant digital communications, as well as technological issues:

> At times it's very stressful because you were probably needed somewhere else or you are caught up with other engagements then you realise you were supposed to visit a certain household […]. Let's say I had decided to volunteer for two or three days in a week and the other days I go attend to my other engagements then you see a [phone] reminder that you are supposed to visit a pregnant woman: you have to follow up and you had not planned for it. Perhaps that day was for attending to the cattle! (IDI, June 2022, female)

> Initially there were only 50 households but once they gave us the phones, the number of households increased and one household consists of nearly 10 people - when you add up it becomes so stressful…the notification instructs you to follow up a pregnant woman and you have to follow up four times per month. When you have like four follow-ups it becomes stressful because there are so many indicators to ask. (IDI, May 2022, male)

### Datafication of Healthcare

CHVs indicated having access to better, more analysable and retrievable data, with automation generating less paperwork. At the same time, new pressures to produce data is changing the healthcare encounter. We observed CHVs pushing back on pressures to produce data against key indicators during monthly meetings, where they felt there were none such cases or such pressures difficult to absorb at a time of stress (e.g. drought). While still volunteers, their data production was closely monitored by CHU staff who wished to increase the performance of their unit and meet the demands of county, national and private actors.

> We are often asked to send data by the CHA. There are those who go for household visits and forget to send so the CHA calls and reminds them to send the data. (IDI, Feb 2023, female)

> The CHA was emphasising the ICCM target and kept on reminding them that they just had to work regardless. 'Serve the community and God will bless you; do not look at the financial aspect!' (Monthly meeting notes, June 2022)

With regards to external actors, LG was particularly invested in data production and assumed a proactive role in encouraging but also disciplining CHVs to generate more/better data, through meetings and CHU staff:

> One of the LG staff went ahead to tell them, since the month was ending on that day, they still had time to go and visit their households so that the data can reflect and help raise their national average (Monthly meeting notes, June 2022)

### Operational Issues

CHVs reported challenges regarding storage capacity, maintenance, charging and data synchronization:

> Charging the system is a problem. We do not have electricity and the phone goes off at 5%. (IDI, Sep 2022, male)

> Sometimes the phone hangs when you're in the field and you have volunteered to work that day. (IDI, May 2022, female)

Operationally, there were sometimes different priorities and timelines at play between county, national and private actors, which also impacted available resourcing. For example, a lack of device maintenance capacity at a county level at a time of environmental crisis impacted implementation. The use of parallel paper systems, used in the short-term by the County but a long-term demand of externally-funded NGOs, led to duplication, confusion and frustration.

Outside of Isiolo's town, the county is a vast, semi-arid region with poor roads, local security issues and intermittent power supply and internet coverage, meaning CHVs struggled to charge phones and sync data.

> Network's a problem. When I compile my report, I have to walk to the dispensary to sync data. (IDI, Feb 2023, male)

> We have to pass through a very dangerous path to get to households. Sometimes you are forced to sleep in the forest and it's dangerous as there are wild animals in that part of the forest. (IDI, Aug 2022, female)

> We've been experiencing power issues for more than three days and can't charge our phones. (IDI, Aug 2022, male)

In cases of system/device failure, CHVs were normally not remunerated on the basis of makeshift paper reports.

## Conclusion and recommendations

Harnessing the potential of digital technologies in health will be hugely important in low-resource settings. With studies on the digitization transition hitherto focused on professional workers (e.g. Preko et al.), CHVs, now CHPs, are at the forefront of its implementation in primary healthcare. The temporary hiatus of digitization in Isiolo in 2023 powerfully demonstrated what is at stake in losing overwhelmingly positive advancements.

However, while CHVs reported benefits such as the quality of data, ease of use and acceptance of the system by community members, there were also limitations including new, sometimes conflicting pressures, work intensification and infrastructural issues heightened by the challenging environment in Isiolo. The Isiolo case spotlights the key question as to what happens when fully digital systems temporarily fail. When CHVs could not report digitally, for whatever reason, the drop in remuneration led to declining work rates or even drop-out.

It is clear that digitization via mobiles will direct CHVs to fulfil their tasks efficiently, consistently and closer to what policy dictates. While this is positive from a health systems perspective, new stresses experienced by volunteers in Isiolo brought into relief the sheer number and variety of duties expected of CHVs by government and non-government actors. Such duties will continue to expand in the management of increasing populations, indicators, conditions and interventions. Isiolo demonstrated how climate change and other environmental stresses will profoundly shape capacity in parts of Kenya. Lastly, CHVs are aware they have become data-producers in a larger ecosystem that is not always perceived to help them or their communities in the short term. While the digital health future is bright, it will require continued and deepening investments in primary healthcare to support it.

## We recommend:

- Rigorous documentation of how many work hours CHVs (now CHPs) take to complete their tasks, disaggregated where possible from partner demands and by urban and rural settings, to feed into payment and protections reviews
- Detailed contingency planning for when digital systems fail, including how CHPs will be compensated, attuned to county conditions and supported by national resourcing depending on county need
- Retained control at the county level to set (data) priorities, own data and manage the technological infrastructure
- Continuous communication/evaluation involving CHPs, government staff and communities on the relationship between data and better healthcare, given data collection is not always perceived to have immediate impact
- Further exploration of the unexpected positive and negative experiences of CHPs and community members, ideally through in-depth qualitative work alongside eCHIS over rapid research methodologies.

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