Enhancing data-driven malaria interventions: Using the Electronic Community Health Information System programme to support community health workers in Buikwe district, Uganda

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Introduction

In collaboration with the Ugandan Ministry of Health, Malaria Consortium in August 2020 introduced the Electronic Community Health Information System (eCHIS). This Ministry of Health owned tool aims to provide evidence-driven community programming that makes use of digital health solutions to improve health service delivery in Uganda. Malaria Consortium's project in Buikwe district seeks to assess the feasibility and acceptability of the eCHIS tool in improving real-time malaria data collection and treatment adherence.

Methods

- Malaria Consortium trained 774 community health workers (CHWs) to use eCHIS. They were equipped with android phones that were pre-programmed with community health service delivery workflows (e.g. household registration; GPS capture; integrated community case management; stock management; family planning; nutrition; water, sanitation and hygiene; immunisation; pregnancy registration; and delivery) for improved evidence-driven health service delivery.
- We conducted a baseline and endline mixed methods cross-sectional survey to assess user acceptability, feasibility and useability of eCHIS, as well as to assess whether village health teams (VHTs) adhered to treatment algorithms for the integrated community case management of malaria, pneumonia and diarrhoea for children under five.
- Kayunga district, a similar but non-digitised district, was chosen as a counterfactual to Buikwe district. We selected a sample of 20 public facilities from each district to review the impact of using or not using digitised data and methods.
- We collected data before introducing the eCHIS and after, between April 2021 and March 2022, to assess trends for out-patient department (OPD) attendance for malaria, diarrhoea and pneumonia among children under five in a digitised and non-digitised district.

Results

- In Buikwe district, OPD attendance for children under five for malaria, diarrhoea and pneumonia dropped by 14 percent (p-value: <0.001), compared to a one percent non-significant change (p-value: 0.073) in Kayunga district.
- Malaria admissions for children under five in Buikwe declined by three percent (p-value: <0.001), compared to one percent non-significant decline in Kayunga.
- Malaria deaths among children under five per 100,000 population per year dropped from 71.7 to 59.5 per 100,000 in Buikwe, but from just 76.1 to 73.1 per 100,000 in Kayunga.
- Qualitative assessments on using the eCHIS app showed improvements in VHTs' ability to set up the app, register households, and assess children under five for common childhood illnesses.
- VHT perceptions on using the smart phones and eCHIS app are extremely positive.

Lessons learnt

- VHTs have been actively involved in the programme's development and implementation, ensuring their ongoing participation and buy-in into the programme.
- Digital tools such as eCHIS can boost the accuracy of malaria diagnosis by VHTs.
- The use of mobile phones has increased CHWs' confidence in conducting health assessments, which has, in turn, improved CHWs' standing within the community. This has led to improved community engagement and acceptance of health messages.
- The eCHIS platform enables information access and supports health care operations management and decision making (stock monitoring and reporting); this creates an enabling environment for improved service provision by the CHWs resulting in improved health care outcomes.
- Real-time data collection significantly enhances community-based malaria case management.
  - Treatment adherence improves with the integration of technology in health interventions.
  - Comparative data analysis provides valuable insights into intervention effectiveness across districts.
  - Acceptance and adaptability of digital tools by VHTs are crucial for the success of health programmes.

Conclusion

The integration of the eCHIS programme in Buikwe district demonstrates the transformative potential of digital tools in enhancing malaria case management, offering a scalable model for similar contexts.

The successful integration of the eCHIS programme into Buikwe district's health system serves as a promising model for promoting data-driven decision-making and enhancing behavioural change

malaria consortium
disease control, better health

Supplementary visuals

Figure 1: Out-patient department attendance due to malaria, diarrhoea and pneumonia among children under five

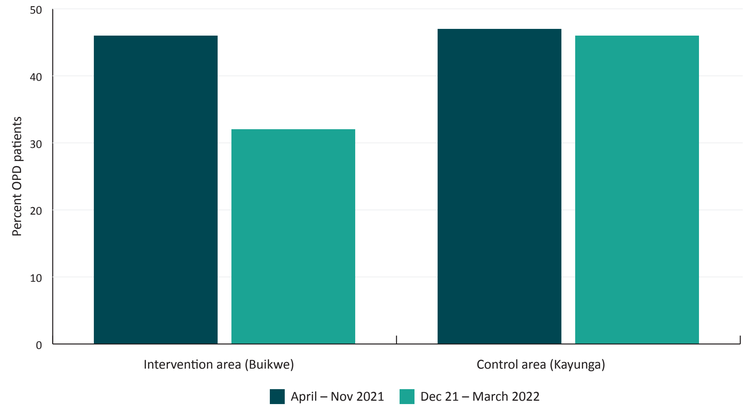

Figure 2: Proportion of village health teams assessed for usability, acceptability and feasibility

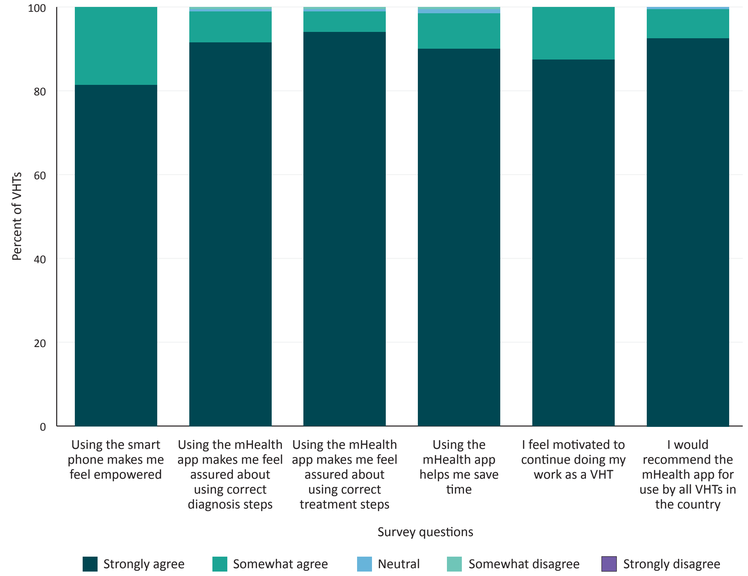

Photo 1: A community health worker shares his experience of using the eCHIS app with village health teams from other districts