

Enhancing the capacity and effectiveness of community health volunteers to improve maternal, newborn and child health: Experience from Kenya

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ABSTRACT

OBJECTIVE: To determine whether a simple monitoring and tracking tool, Mwanzo Mwema Monitoring and Tracking Tool (MMATT), would enable community health volunteers (CHVs) in Kenya to 1) plan their workloads and activities, 2) identify the women, newborns and children most in need of accessing critical maternal, newborn and child health (MNCH) interventions and 3) improve key MNCH indicators.

METHODS: A mixed methods approach was used. Household surveys at baseline ($n = 912$) and endline ($n = 1143$) collected data on key MNCH indicators in the four subcounties of Taita Taveta County, Kenya. Eight focus group discussions were held with 40 CHVs to ascertain their perspectives on using the tool.

RESULTS: Qualitative findings revealed that the CHVs found the MMATT to be useful in planning their activities and prioritizing beneficiaries requiring more support to access MNCH services. They also identified potential barriers to care at both the community and health system levels. At endline, previously pregnant women were more likely to have received four or more antenatal care visits, facility delivery, postnatal care within two weeks of delivery and a complete package of care than baseline respondents. Among women with children under 24 months, those at endline were more likely to report early breastfeeding and exclusive breastfeeding for the first six months. These results remained after adjustment for age, subcounty, gravida, mother's education and asset index.

CONCLUSION: Our results demonstrate that simple tools enable CHVs to identify disparities in service delivery and health outcomes, and to identify barriers to MNCH care. Tools that enhance CHVs' ability to plan and prioritize the women and children most in need increase CHVs' potential impact.

KEY WORDS: Community health workers; maternal health; child health; Kenya; program evaluation

La traduction du résumé se trouve à la fin de l'article.

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Kenya has been faced with slow progress in improving maternal, newborn and child health (MNCH) outcomes: maternal mortality remains high at 362 per 100 000 births, and under-five, infant and neonatal mortality rates are 52, 39 and 22 per 1000 live births respectively.¹ Access to a comprehensive package of evidence-based interventions, delivered along the continuum of care, could decrease MNCH-related mortality and morbidity.^{2,3}

In Kenya, cost and distance to facilities are recognized barriers to seeking care during pregnancy, birth and the postnatal period.¹ Encouraging positive behaviours and improving the knowledge of individuals and communities are also critical to improved coverage of MNCH interventions. Human resource constraints within resource-limited settings have increased interest in using frontline workers, such as community health workers (CHWs), to improve MNCH by increasing access, reducing inequities and improving key health indicators in rural settings.⁴

In 2011, Kenya introduced its Community Health Strategy, which aims to improve health outcomes, including MNCH, by promoting individual and community health⁵ through the use of community health volunteers (CHVs – the name for CHWs in Kenya). To have maximum impact on MNCH, CHVs must regularly reach a high

proportion of women and children throughout the continuum of care⁶ to deliver key messages and link individuals to services. Monthly household visits, identifying targets and collecting aggregate data for health information systems (HIS) has accounted for much of CHVs' interactions with women and their families to date.⁷ While community-level HIS are effective in guiding district level planning and action,^{7,8} tools to support CHVs' activities, such

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as identifying and monitoring the individuals most in need of critical MNCH services, have been lacking. Along with training and supportive supervision, such tools could increase the effectiveness and efficiency of the current CHV model, establishing maximum and equitable coverage in every community.

To address this gap, we designed, implemented and evaluated the Mwanzo Mwema Monitoring and Tracking Tool (MMATT), which enabled CHVs to identify and track pregnant women and women with children under five, including client referrals to health facilities, in their catchment areas. With the tool, CHVs documented number of antenatal care (ANC) visits, place of delivery, postnatal care (PNC), immediate and exclusive breastfeeding, and under five immunization status. The tool also served as a checklist for critical MNCH counselling topics, including ANC, health facility delivery, PNC, balanced diet and immunizations. Developed in conjunction with CHVs, the MMATT was part of a larger MNCH program addressing nutrition and food security (named Mwanzo Mwema), implemented in Taita Taveta County, one of Kenya's high burden MNCH counties⁹ (for more project information visit: <http://www.acdi-cida.gc.ca/cidaweb/cpo.nsf/vWebProjSearchEn/AF3059074E64043585257E3600368098>). Ninety-one CHVs across Taita Taveta used MMATT to provide outreach services to 1076 pregnant women and over 10 000 children under five from June 2013 to January 2015 (1 CHV = ~120 households). In line with Kenya's Community Health Strategy, all project CHVs were selected by their local communities, had to be able to read and write, were permanent residents of the area and were unpaid volunteers. The majority of CHVs participating in our program were women, only two of the

91 CHVs recruited being men. CHVs were trained on MMATT and key MNCH topics in two stages prior to implementation; this was followed by continuous on-the-job training and supportive supervision provided by local project officers.

Our objective was to determine whether a simple monitoring tool would enable CHVs to use local data to 1) plan their workloads and activities, 2) identify the women, newborns and children most in need of critical MNCH interventions and 3) improve key selected MNCH indicators.

METHODS

This mixed methods study was conducted in the four subcounties of Taita Taveta County in Kenya; Voi, Taita, Mwatate and Taveta. Baseline and endline assessments, including cross-sectional household surveys and qualitative components, were conducted in November 2012 and February 2015 respectively. Sample size calculation was based on probability proportional to size at sub-location level, and households were selected by simple random sampling. Interviewers targeted households with children under five, pregnant women or women aged 15–49 years. The survey, completed by self-identified primary female caregivers in each household, included questions regarding MNCH, nutrition and socio-demographic information. Electronic databases were used for data entry, and the data were analyzed using Stata (V12, College Station, TX).

Outcome indicators

Seven outcome indicators were compared between the time points. For analysis, six indicators (Table 1) were assessed among women

Table 1. Selected MMATT and demographic characteristics of previously pregnant women, aged 15–49 years, at baseline and endline

	Baseline		Endline		p value
	No. (total)	%	No. (total)	%	
Proportion of women who had four or more antenatal care visits	430 (770)	55.8	323 (494)	65.4	0.001
Proportion of women who delivered at a health facility	530 (780)	67.9	398 (497)	80.1	0.000
Proportion of women who had a postnatal care check-up within 48 hours after delivery	434 (747)	58.1	292 (497)	58.8	0.819
Proportion of women who had a postnatal care check-up within 1–2 weeks after delivery	98 (747)	13.1	96 (455)	21.1	0.000
Proportion of children who received DPT3/pentavalent vaccine	649 (710)	91.4	451 (485)	93.0	0.321
Complete care indicator	202 (780)	25.9	167 (497)	33.6	0.003
Mother's age (years)					0.004
15–20	71	9.1	67	13.5	
21–39	641	82.2	405	81.5	
40+	68 (780)	8.7	25 (497)	5.0	
Subcounty					0.000
Taita	282	36.2	59	11.9	
Mwatate	124	15.9	124	24.9	
Voi	257	32.9	228	45.9	
Taveta	117 (780)	15.0	86 (497)	17.3	
Gravida					0.444
1	236	30.9	143	29.4	
2	166	21.8	121	24.8	
3+	361 (763)	47.3	223 (487)	45.8	
Mother's education					0.000
No schooling	33	4.3	34	6.9	
Primary	506	65.2	294	59.4	
Secondary	207	26.7	114	23.0	
Vocational or higher	30 (776)	3.9	53 (495)	10.7	
Tertiles of asset index					0.985
Low	240	35.3	160	35.6	
Medium	227	33.4	151	33.6	
High	212 (679)	31.2	138 (449)	30.7	

Note: MMATT, Mwanzo Mwema Monitoring and Tracking Tool.

15–49 years of age who were previously, but not currently, pregnant. For this study, a composite indicator was constructed to capture the concept of a “complete” package of care along the MNCH continuum: this consisted of four or more ANC visits, facility delivery, PNC within 48 hours and childhood DPT (diphtheria, pertussis tetanus)/pentavalent vaccination. Table 2 compares the data on the two breastfeeding indicators from all women 15 years and older with children under 24 months.

To address potential confounding due to socio-economic status, an asset index was created by entering relevant items into a principal components analysis (PCA); because of the binary/categorical nature of all items, polychoric PCA was used. For this analysis, only the first principal component served as a proxy to measure individual households’ assets using the following: source of water in the dry season, type of cooking fuel and primary provider of household income. The asset index was grouped into low, medium and high tertiles, presented in Tables 1 and 2. (For additional description see Supplementary Appendix A, in the ARTICLE TOOLS section on the journal site.)

Statistical analyses

Basic bivariate analyses compared all outcome indicators between time periods; statistical significance was assessed using Pearson’s chi-square tests. Additionally, age group, subcounty of residence, gravida and mother’s education level were compared between time periods.

Multiple logistic regression was used to assess the association between time period (main dependent variable) and selected indicators. Age, subcounty, mother’s education level and asset

index were thought a priori to potentially affect the association between outcome indicators and time period, and were added to multivariable models. Adjusted odds ratios and their 95% confidence intervals are reported.

Focus group discussions

At endline, focus group discussions (FGDs) with CHVs and project beneficiaries sought to explore their experiences and to understand any behavioural changes that may have occurred as a result of the project. FGDs were conducted in Kiswahili and Kitaita by external trained interviewers hired specifically for this task. Two FGDs lasting for an average of two hours each were conducted in every subcounty in January/February 2015 for a total of eight FGDs with 40 CHVs (39 women, 1 man). Project staff recruited CHVs for the FGDs. Purposive sampling ensured that there was maximum variance in terms of geographic location, age and ethnicity. Project staff were also instructed to recruit CHVs who had not participated in previous rounds of FGDs and who had differing levels of experience as CHVs and with Mwanzo Mwema. As this was part of evaluating a project that CHVs were still actively involved in, to protect participants’ anonymity identifiable demographic information was not collected. FGDs were recorded, transcribed and translated into English. Thematic analysis focused on identifying themes related to CHVs’ use of the MMATT tool as well as challenges and barriers to uptake of CHVs’ counselling.

The study protocol was approved by the University of Manitoba’s Health Research Ethics Board and the Kenyatta National Hospital/University of Nairobi Ethics and Research Committee. Signed informed consent was obtained from all participants.

Table 2. Selected demographic and MMATT characteristics of women aged 15+ years with a child under 24 months of age, at baseline and endline

	Baseline		Endline		p value
	No. (total)	%	No. (total)	%	
Proportion of children born in the previous 24 months who were exclusively breastfed for up to 6 months	178 (372)	47.8	339 (473)	71.7	0.000
Proportion of children born in the previous 24 months who were put to the breast within one hour of birth	64 (378)	16.9	241 (476)	50.6	0.000
Mother’s age (years)					0.285
15–20	43	11.1	70	14.7	
21–39	315	81.2	369	77.5	
40+	30 (388)	7.7	37 (476)	7.8	
Subcounty					0.000
Taita	143	36.9	56	11.8	
Mwatate	55	14.2	130	27.3	
Voi	128	33.0	206	43.3	
Taveta	62 (388)	16.0	84 (476)	17.6	
Gravida					0.347
1	118	33.1	131	28.5	
2	80	22.4	115	25.0	
3+	159 (357)	44.5	214 (460)	46.5	
Mother’s education					0.001
No schooling	20	5.2	37	7.8	
Primary	256	66.5	279	58.9	
Secondary	93	24.2	107	22.6	
Vocational or higher	16 (385)	4.2	51 (474)	10.8	
Tertiles of asset index					0.788
Low	128	37.6	152	35.3	
Medium	108	31.8	139	32.3	
High	104 (340)	30.6	139 (430)	32.3	

Note: MMATT, Mwanzo Mwema Monitoring and Tracking Tool.

RESULTS

The demographic characteristics of both baseline and endline respondents were similar and are presented in Tables 1 and 2.

Bivariate analyses

At endline, previously pregnant women aged 15–49 years were more likely to have received four or more ANC visits, skilled delivery at birth, PNC within two weeks of delivery and a complete package of care, as compared with baseline respondents (Table 1). Among all women 15 years or older with children under 24 months of age, women at endline were more likely to report early breastfeeding and exclusive breastfeeding for the first six months (Table 2).

Multivariable analyses

Crude odds ratios assessing differences between endline and baseline respondents among the outcome indicators are included in Supplemental Tables 1 and 2 (see Supplementary Appendix A, in the ARTICLE TOOLS section on the journal site). All models were adjusted for age group, subcounty, gravida, mother's education and asset index. Among previously pregnant women aged 15–49, endline respondents were more likely to report four or more ANC visits (adjusted odds ratio [AOR] 1.6, $p = 0.001$), facility delivery (AOR: 1.9, $p < 0.001$), PNC within two weeks (AOR: 1.8, $p = 0.001$) and receipt of a complete package of care (AOR: 1.4, $p = 0.03$) (Table 3). There were no differences in PNC within 48 hours of delivery or DPT/pentavalent vaccination. For all women aged 15–49 years, endline respondents were more likely to report early breastfeeding (AOR: 4.8, $p < 0.001$) and exclusive breastfeeding for six months (AOR: 3.3, $p < 0.001$) (Table 4).

Focus group discussions

In FGDs, CHVs discussed their use of the MMATT in planning visits, monitoring progress, prioritizing beneficiaries and managing workload. They also raised concerns about factors outside of their control that impeded the uptake of counselling messages.

Facilitating Daily Work

CHVs discussed a number of ways in which using MMATT facilitated their daily work, including having a better sense of their overall workload:

“After you had registered your households, it was easy to monitor them. You would know how many children you have, how many pregnant you have and how many have delivered. So it helped you to know what to do with each of these groups, you know what to do with the pregnant women and so on.” (Female CHV, Taveta subcounty)

Respondents primarily discussed using MMATT in planning their days, as it allowed them to identify which beneficiaries needed their attention most and which counselling topics and activities should be covered in these visits:

“It helps you to plan ahead and you go to those who need your help most first. You are able to keep track of everyone through the records. You can also tell those you have covered, how are the children, the mothers.” (Female CHV, Mwatate subcounty)

“It helped to remind you of things. You would plan your visit before hand and you are prepared with all the information.... It helps you to plan.” (Female CHV, Taveta subcounty)

The planning, in turn, increased the “ease” with which they were able to go about their activities.

“It has made it work easier It has made it easy to plan ahead for me. I know what I am going to do in a particular household and you proceed easily.” (Female CHV, Taita subcounty)

Monitoring

Having access to the information captured in the MMATT over time allowed CHVs to follow beneficiaries' progress in the various indicators recorded.

“... Now it is easy to keep track of all your beneficiaries with their varied needs. I am able to monitor progress easily.” (Female CHV, Taveta subcounty)

Being able to look at trends over time, for instance in mid-upper arm circumference (MUAC), additionally allowed CHVs to identify problems arising:

“It was also helping because you could monitor your client's progress, you can tell at a glance whether they have improved or not so you know what to talk about.” (Female CHV, Taveta subcounty)

“Even when you look at the child's MUAC you will be like aaah! Even last time how much did it weigh? It's something to refer that last time it was this much but now it has lost 5 kg. So make an effort when it comes next time it will have added more. So it has been quite good it's like something for reference to help her.” (Female CHV, Voi subcounty)

Having the information on activities recorded in one place also let CHVs track their own progress in terms of completed activities:

“So nothing is left undone because you forgot. Everything is covered in the tool. Even if a house has many children under 5, it is still easy for you follow all of them.” (Female CHV, Taita subcounty)

MNCH Indicators

CHVs from all FGDs talked about behaviour changes among beneficiaries, including facility deliveries, ANC and breastfeeding. The importance of early and exclusive breastfeeding and providing breastfeeding support were considered to have the greatest impact:

“To add on to the issue of exclusive breastfeeding, most women were unable to do this for 6 months because many people did not know its importance. ... Also many women did not know how to breastfeed, so the problem was not the quantity of the milk being little, but how to breastfeed the child. ... The how of breastfeeding has changed things drastically. The children get satisfied and sleep well and the women were very happy about this.” (Female CHV, Mwatate subcounty)

CHVs from all across the county reported increased facility deliveries in their villages:

Adjusted odds ratios and 95% confidence intervals from fully adjusted logistic regression models, women aged 15–49 years who were previously pregnant

	Women who had 4+ ANC visits	Women who delivered at a health facility	Women who received PNC within 48 hours of delivery	Women who received PNC within 1–2 weeks of delivery	Children who received DPT/pentavalent vaccination	Completed
	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
years)	1.558** (1.19–2.04)	1.921*** (1.41–2.62)	1.033 (0.79–1.35)	1.823*** (1.28–2.60)	1.310 (0.80–2.13)	1.394* (1.00–1.94)
	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
	1.388 (0.90–2.15)	1.800* (1.11–2.92)	1.368 (0.89–2.10)	1.404 (0.74–2.65)	1.952* (1.01–3.79)	1.689* (1.00–2.86)
	1.992* (1.03–3.86)	2.571** (1.26–5.26)	2.208* (1.14–4.28)	0.859 (0.33–2.26)	3.719 (0.96–14.45)	2.606** (1.00–6.81)
	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
	1.133 (0.77–1.67)	1.810** (1.19–2.76)	1.440 (0.98–2.12)	0.748 (0.43–1.30)	1.011 (0.49–2.09)	1.611* (1.00–2.58)
	1.148 (0.82–1.61)	1.857*** (1.29–2.68)	1.361 (0.97–1.90)	0.969 (0.61–1.53)	0.936 (0.50–1.74)	1.346 (0.82–2.18)
	0.701 (0.47–1.05)	1.292 (0.85–1.97)	1.062 (0.72–1.58)	0.932 (0.54–1.61)	0.721 (0.35–1.46)	0.931 (0.50–1.74)
	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
	1.196 (0.83–1.72)	0.992 (0.65–1.51)	1.130 (0.79–1.61)	0.914 (0.56–1.50)	1.007 (0.54–1.86)	1.182 (0.72–1.94)
	0.935 (0.68–1.29)	0.628* (0.43–0.91)	0.878 (0.64–1.21)	1.130 (0.73–1.74)	1.192 (0.67–2.13)	0.863 (0.50–1.50)
Education	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
ing	1.858* (1.06–3.24)	2.866*** (1.63–5.04)	1.322 (0.75–2.34)	0.612 (0.31–1.20)	1.039 (0.39–2.80)	3.430** (1.00–12.30)
	2.730** (1.50–4.98)	4.634*** (2.48–8.66)	1.218 (0.66–2.24)	0.606 (0.29–1.26)	1.119 (0.38–3.26)	3.674** (1.00–13.50)
	4.792*** (2.15–10.69)	8.299*** (3.15–21.88)	1.616 (0.76–3.45)	0.324* (0.11–0.92)	1.021 (0.28–3.74)	7.137*** (1.00–50.00)
or (tertiles)	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>	<i>Ref (-)</i>
	1.479* (1.08–2.02)	0.875 (0.61–1.25)	1.016 (0.75–1.38)	0.921 (0.60–1.41)	1.185 (0.68–2.05)	1.059 (0.72–1.54)
	1.620** (1.17–2.25)	0.769 (0.54–1.10)	1.125 (0.81–1.55)	1.014 (0.66–1.57)	1.375 (0.76–2.48)	1.128 (0.78–1.61)
	1091	1100	1071	1035	1033	1033

Unadjusted coefficients; 95% confidence intervals in brackets. ANC, antenatal care; PNC, postnatal care.
 * $p < 0.01$; ** $p < 0.001$.

Women who were previously pregnant and received all of the following: 4+ ANC visits, skilled delivery at birth and PNC within 48 hours, and whose children received DPT vaccination.

Table 4. Adjusted odds ratios and 95% confidence intervals from fully adjusted logistic regression models, women aged 15+ years with a child under 24 months of age

	Children who were exclusively breastfed for up to six months	Children who were put to the breast within one hour of birth (early breastfeeding)
Time period		
Baseline	Ref (-)	Ref (-)
Endline	3.259*** (2.31-4.60)	4.768*** (3.29-6.91)
Age group (years)		
15-20	Ref (-)	Ref (-)
21-39	0.915 (0.53-1.58)	1.545 (0.89-2.69)
40+	1.202 (0.52-2.79)	1.222 (0.52-2.88)
Subcounty		
Taita	Ref (-)	Ref (-)
Mwatate	0.786 (0.47-1.31)	1.267 (0.74-2.18)
Voi	0.526** (0.33-0.83)	1.878* (1.14-3.08)
Taveta	0.856 (0.49-1.49)	1.005 (0.55-1.83)
Gravida		
1	Ref (-)	Ref (-)
2	0.847 (0.54-1.34)	1.273 (0.80-2.02)
3+	0.685 (0.45-1.05)	1.059 (0.68-1.64)
Mother's education		
No schooling	Ref (-)	Ref (-)
Primary	1.240 (0.62-2.47)	0.960 (0.49-1.89)
Secondary	1.204 (0.57-2.54)	1.086 (0.52-2.28)
Vocational	1.053 (0.43-2.57)	0.666 (0.27-1.62)
Asset indicator (tertiles)		
Low	Ref (-)	Ref (-)
Medium	1.107 (0.75-1.64)	0.861 (0.57-1.30)
High	1.815** (1.18-2.78)	0.955 (0.61-1.48)
N	711	717

Note: Exponentiated coefficients; 95% confidence intervals in brackets.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

"... Since we have started Mwanzo Mwema in my village, I have not heard of a woman who has delivered at home." (Female CHV, Mwatate subcounty)

They mentioned birth preparedness as a strategy women used to overcome barriers to facility delivery, such as cost and distance:

"... But now we have just talked to them about planning early, even before the child is conceived, you start saving and making plans." (Female CHV, Taveta subcounty)

While ANC was not discussed much, CHVs mentioned that earlier attendance at clinics for ANC, as well as more visits, was becoming more common:

"It was common for women to wait until 7 months pregnant before they even think of going to the clinic. They would go to the clinic only once ... I have really concentrated on this and I have seen many women catch up to it and adopt it." (Female CHV, Mwatate subcounty)

Barriers

CHVs identified barriers that both related to them specifically and comprised broader systemic and environmental factors hampering beneficiaries' uptake of their counselling.

In terms of factors relating to the CHVs, participants felt disconnected from the health care system:

"But I think it is because [staff] were not involved in the training so they did not realize the significance of that referral. If they had been trained, they would have known." (Female CHV, Taita subcounty)

Lack of resources (including money, food and water) was most often discussed as a barrier for beneficiaries, especially with regard to nutrition:

"This [lack of food] was important ... when you counsel someone on what to eat, sometimes they look at you funny because you can see that they cannot afford what you are telling them. So you had to find alternatives that are easily accessible to them." (Female CHV, Taveta subcounty)

Other systemic and environmental factors deterring women from accessing health care included inadequate staffing, distance to health care facilities, terrain and wild animals.

DISCUSSION

Implementing a simple tool in conjunction with training and supportive supervision allowed CHVs to better manage their daily activities and workloads. Since the impact of CHV outreach depends on maximizing interactions with women, newborns and children,⁶ CHVs' ability to monitor who has been seen and the counselling topics discussed minimizes duplication of effort, enhancing CHV efficiency and job satisfaction. Large catchment areas and increasing responsibilities coupled with poor support for planning and efficiency contribute to job stress and high attrition rates in CHW programs globally.¹⁰⁻¹² Furthermore, as much of the burden of MNCH morbidity and mortality rests with vulnerable populations, improved outcomes are inextricably linked to a program's ability to identify and reach those in greatest need.^{13,14} In our context, CHVs stated that using MMATT helped them identify and prioritize the most vulnerable. However, our quantitative analysis was unable to demonstrate improved access to care based on the asset index. This may reflect the impact of broader barriers of access to care that vulnerable women face, such as cost, distance and transport.¹ More attention to how CHV programs can best reach and demonstrate improved access for vulnerable people is required.

Our evaluation shows that simple tools can assist CHVs in promoting positive behaviours in the community, as evidenced by improved MNCH indicators. The significant increases in ANC visits, skilled delivery, PNC within two weeks and early and exclusive breastfeeding are encouraging and similar to others' findings.^{10,15,16} Increasing coverage of these interventions can improve MNCH outcomes.^{2,3,17,18} The increase in breastfeeding was particularly promising, as this low-tech intervention could prevent more than 1.45 million newborn deaths annually if taken to scale globally.¹⁹ Not surprisingly, the most significant changes occurred in interventions with poor coverage at baseline, since interventions with already acceptable levels of coverage often demonstrate minimal improvements, as was the case with our DPT/pentavalent indicator.^{17,20}

Although the number of facility deliveries increased, PNC within 48 hours did not. One potential explanation is that women who delivered in facilities may have received PNC but not reported it, since it was not a separate visit. Alternatively, poor

quality of PNC at facilities^{21,22} may have prompted women to leave facilities sooner than the recommended 48-hour stay. Our results are consistent with the poor utilization of PNC reported globally.^{17,20,23,24} This emphasizes the importance of a continuum of care approach encompassing all interventions as a complete package of care, particularly since the postnatal period represents a critical period in women and children's lives: over 50% of maternal deaths^{25,26} and 40% of neonatal deaths occur in the 48 hours following childbirth; neonatal deaths increase to 75% by the end of the first week of life.^{14,27}

Much of the MNCH literature focuses on scaling up individual interventions,^{2,3,14,20} but a more comprehensive approach is required to improve MNCH outcomes: a critical package of MNCH services must be available, utilized and of sufficient quality throughout the continuum of care.²⁸ The CHVs' use of MMATT resulted in more women and children accessing a complete package of care at endline as compared with baseline. If scaled up, such improvements could reduce interrupted access to critical MNCH interventions, which has slowed progress in decreasing maternal, newborn and child mortality.⁶

Demonstrating improved access to care is not enough to decrease maternal, newborn and child mortality. Improved access to MNCH interventions may not translate to improved MNCH outcomes if skilled, high-quality care is not provided at the point of access. This highlights the importance of integrating CHW programs within the health system and ensuring that the quality of facility care is strengthened when a community's demand for critical MNCH services increases.^{29,30}

Limitations

External factors may have influenced our results. Although other development actors were present in the County, little overlap occurred with our project. At County level, no other changes in service provision occurred during this time. The national elimination of MNCH fees occurred prior to program implementation. A mobile clinic was donated to the county as part of the Beyond Zero Campaign to End Maternal Deaths; however, emphasis was on immunization and ANC visits and only one vehicle was allocated to the County. Therefore, it is unlikely that this contributed significantly to the improved indicators throughout the continuum of MNCH care.

Despite using similar sampling methodology, the baseline and endline respondents differed in terms of mother's age, education and subcounty representation. These differences are partly attributable to the selection of project sites: data collected at baseline reflected the County as a whole and provided the study team with the information to select implementation sites with higher MNCH and nutrition burden. At endline, only households in the implementation sites were selected for the household survey so as to interview women who had participated in the intervention. However, the results were consistent when comparison between baseline and endline data was repeated including only the implementation sub-locations. The trajectory of pre- and post-intervention outcomes is not known since these outcomes were not measured at multiple time periods. Thus, secular trends prior to intervention may have played a role in the outcomes, and the long-term impacts of the intervention are unknown at this point.

Selecting only women who benefitted from our project at endline may have increased the risk of respondent bias: women who were counselled on specific topics would have known what the "right" or expected answers were.

FGD participants were recruited by project staff with whom CHVs worked on a daily basis. Project staff may have recruited only those CHVs they felt would present the project in a positive light. Alternatively, the CHVs may have felt pressured to participate. However, project staff were instructed to ensure that CHVs knew participation was voluntary, and this was reiterated by FGD moderators before the discussions (at which project staff were not present). The team conducting the FGDs consisted of three individuals who were not involved with project implementation, and every attempt was made to assure participants of their independence from the project. However, given that one of the team members was from the Canadian university involved, it is possible that participants' responses were tailored to her presence.

CONCLUSION

Many low-resource countries are implementing CHW models to strengthen their health system and increase coverage and access to critical MNCH interventions. Our results show that the introduction of a simple job aid, along with training and supportive supervision, can facilitate CHWs' ability to plan and prioritize their daily activities. This in turn facilitated more effective interactions with women, newborns and children, thereby increasing uptake of interventions and improving outcomes throughout the continuum of care.

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RÉSUMÉ

OBJECTIF : Déterminer si un simple outil de surveillance et de localisation, le Mwanzo Mwema Monitoring and Tracking Tool (MMATT), permettrait aux agents de santé communautaire bénévoles (ASCB) du Kenya : 1) de planifier leur charge de travail et leurs activités, 2) de dresser la liste des femmes, des nouveau-nés et des enfants ayant le plus besoin d'accéder aux interventions de santé maternelle, néonatale et infantile (SMNI) critiques et 3) d'améliorer les principaux indicateurs de SMNI.

MÉTHODE : Nous avons utilisé une approche à méthodes mixtes. Des sondages menés auprès des ménages au début ($n = 912$) et à la fin ($n = 1\ 143$) de l'étude ont permis de recueillir des données sur les principaux indicateurs de SMNI dans quatre subdivisions du comté de Taita-Taveta, au Kenya. Huit discussions thématiques de groupe ont eu lieu avec 40 ASCB pour connaître leurs points de vue sur l'utilisation de l'outil.

RÉSULTATS : Les constatations qualitatives de l'étude ont révélé que les ASCB ont trouvé le MMATT utile pour planifier leurs activités et classer par ordre de priorité les bénéficiaires nécessitant une aide particulière pour accéder aux services de SMNI. Ils ont aussi cerné les obstacles possibles aux soins à l'échelle des communautés et du système de santé. À la fin de l'étude, les femmes qui avaient été enceintes étaient plus susceptibles que les répondantes au début de l'étude d'avoir reçu quatre visites de soins prénatals ou plus, d'avoir accouché en clinique, et d'avoir reçu des soins postnatals moins de deux semaines après l'accouchement et un éventail complet de soins. Chez les femmes ayant des enfants de moins de 24 mois, les répondantes à la fin de l'étude étaient plus susceptibles d'avoir allaité leur enfant de façon précoce et exclusive au cours de ses six premiers mois de vie. Ces résultats se sont maintenus après la prise en compte de l'âge, de la subdivision du comté, du nombre de grossesses, ainsi que du niveau d'instruction et de l'indice des actifs de la mère.

CONCLUSION : Nos résultats démontrent que des outils simples permettent aux ASCB de repérer les disparités dans la prestation de services et les résultats sanitaires et de cerner les obstacles aux soins de SMNI. Les outils qui améliorent la capacité des ASCB de planifier leurs activités et de classer par ordre de priorité les femmes et les enfants ayant le plus besoin de soins accroissent l'impact potentiel des ASCB.

MOTS CLÉS : agents de santé communautaire; santé maternelle; santé de l'enfant; Kenya; évaluation de programme