

Original Research Article

A quasi-experimental study of effects of community health workers' incentivisation on uptake of maternal, newborn and child health services in Lamu County, Kenya

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ABSTRACT

Background: Community health workers (CHWs) are known as the 'gate keepers' of good health in the community. Being the first contact with the patients at the community level, they can help improve the maternal, newborn and child health (MNCH) indicators if they are well motivated to conduct their day-to-day work. At the same time, MNCH indicators are negatively affected by hard-to-reach health facilities and cultural factors thus the CHWs can help improve the health status in this category.

Methods: The study utilized a quasi-experimental study design with an intervention and a control site in both Lamu West and Lamu East Sub Counties. Purposive sampling used to select study population and study site. Study period was (August 2018-March 2022). Mixed methods approach was used with both quantitative and qualitative methodologies of data collection to enable data triangulation. Questionnaires were used to collect data from CHWs, focused group discussions with caregivers and In-depth Interviews conducted with key informants from the Ministry of Health- Lamu County and the implementing partner-PharmAccess.

Results: The study established that 78% of the CHWs were selected by the community members. Most of the CHWs in the intervention site had attended other trainings after the initial capacity development program, had at least one supervision in the last month preceding evaluation, were satisfied with the community and county appreciation. The difference between control and intervention site had a statistical significance ($p < 0.05$) for report writing during home visits, cross-referencing of reports before submission, attendance of refresher courses, loss of interest to work as a CHW and referral of patients to link facilities.

Conclusions: CHWs need motivation in delivering their services. This can be done in form of incentives (both monetary and non-monetary), refresher trainings and supportive supervision.

Keywords: Incentives, Community health workers, Uptake

INTRODUCTION

Kenya's community health strategy aims to provide basic prevention and care services. Community health volunteers (CHVs) make home visits and deliver health promotion messages, treat common ailments and illnesses,

and establish protocols for community-based maternal and newborn health, among others. CHVs are supervised by community health extension workers (CHEWs) and operate within community health units encompassing about 5,000 Kenyan citizens. The areas that have an active community health program have demonstrated

improvements in antenatal care visits, testing and treatment for diseases like HIV and malaria, and child immunizations. Over the last few years, there has been an increased proportion of women receiving antenatal and childbirth care from skilled health professionals thus yielding significant global reductions in maternal and newborn morbidity and mortality.^{1,2} Despite the gains, many women around the world still lack access to maternal, newborn and child health (MNCH) services, slowing overall improvements in health outcomes for mothers and children.³ To achieve universal health coverage (UHC), sustainable development goal (SDG) 3 emphasizes the importance of quality essential services such as reproductive, maternal, and newborn care.¹ Improving maternal, newborn, and child health is an important priority in sub-Saharan Africa where most births and deaths occur at home. In addition, primary actions and decisions that influence the health outcomes of a community are made at the household level.⁴

Although Kenya has increased efforts towards achieving the SDG targets of less than 70 maternal deaths per 100,000 live-births and 12 neonatal deaths per 1000 live births by 2030, the number of deaths remain relatively high.^{5,6} One strategy being championed to reduce maternal and neonatal mortality is to increase access to services at lower levels of the health system, especially at the community level.⁷ Community health services (CHS) are articulated as first-tier health services in the Ministry of Health (MoH) policies and are embedded within the PHC concept.^{7,8} Community health workers (CHWs) are considered the cornerstone for promoting primary health care and are recognized as key players in achieving these SDGs. They play an important role in community-based care for MNCH interventions, and creating liaison with facility-based care, thus saving the lives of mothers and children.⁹

In many resource-constrained settings, trained CHWs are often the first point of contact between communities and the health care system. They play a vital role in conveying essential health information in a culturally sensitive manner, empowering community members to make informed decisions and improving community-level access to essential health services.¹⁰ CHWs play a key role in providing the motivation for women to change behaviors surrounding birth, delivery, and newborn care; behaviors deeply rooted in a specific social-cultural context. CHWs form an entry point into multiple social networks, networks that are essential to build the requisite trust and momentum for any type of change in health behaviors.¹¹

The CHVs are chosen by their community to provide home-based care and counselling services. Through their activities, they create demand for formal clinical services and link clients to second-tier PHC services at dispensaries and health centers.⁸ Community health volunteers are often relied upon by health facilities for creating demand for reproductive, maternal, newborn and child health and immunization services. Evidence has shown that

community-based service delivery through community health workers can increase utilization of these services in rural, hard-to-reach or under-served areas.¹²

Lamu county has an estimated maternal mortality ratio of 676 deaths per 100,000 live births, which contributes to 60% of maternal deaths in Kenya. The Under Five Mortality rate is at 57 deaths per 1000 live births, which is higher than the National rate at 52 deaths per 1000 live births.¹³ This informed the implementation of an MNCH project in the region by Safaricom Foundation and PharmAccess which was implemented from the year 2018 to 2021. One of the Afya Uzazi Salama Project's objectives was to increase demand for MNCH services by investing in primary health care, improving community education on MCH, reviving community health units and conduct community health outreaches. The project provided mama packs at the health facilities to improve skilled deliveries, revived eight community units used as the intervention sites in this evaluation, trained and supervised the CHWs in this community units on MNCH services and helped increase MNCH knowledge among community members by supporting community dialogues and community action days.

This study sought to assess the impact of empowering the CHWs in increasing demand for MNCH services, hence improving the MNCH indicators in Lamu County. The CHWs were trained in report writing during home visits, referral of MNCH services, supervised regularly by the CHEW or CHA and given airtime incentives to motivate their day-to-day work. These activities were conducted in the intervention sites while the control sites were not a beneficiary of this project.

METHODS

The study was conducted between August 2018 and March 2022. The study adopted a quasi-experimental study design involving community units supported by Uzazi Salama Project (intervention) and those not supported by Uzazi Salama Project (control) in Lamu County. The study population included CHWs, PharmAccess Staff, and the Lamu County Department of Health. The study took a mixed methods approach that included both qualitative and quantitative methodologies and involved multiple sources of data to enable data triangulation. Data collection entailed several methods including desk review of some of the project's key documents to understand the goal and objections thus inform the design of the data collection tools. Researcher administered questionnaires were used to collect data from the CHWs. FGDs were conducted with caregivers to assess the work of CHWs at the household level and key informant interviews (KIIs) were conducted with health care providers in health facilities linked to the selected community units. Data analysis was done using statistical package for the social sciences (SPSS) version 22 and Microsoft excel for quantitative data, while thematic analysis was used for the qualitative data.

Study sites and sampling

Lamu County was purposively selected given the Afya Uzazi Salama Project funded by Safaricom Foundation and implemented by Pharm Access in collaboration with the County Government of Lamu. Lamu County contributes to 50% of maternal deaths in Kenya with little donor funding towards MNCH. Purposive sampling was used to select Lamu East and Lamu West Sub Counties since the implementation of the Afya Uzazi Salama project was done here. The Community Units were also selected purposively classifying those under project implementation area as intervention sites and those that did not benefit from the project as control sites but within the two sub counties.

RESULTS

The data was collected from 251 respondents, whereby 63.3% were from Lamu West Sub County and 36.7% were from Lamu East Sub County. The intervention site had respondents from Lamu West and Lamu East Sub Counties represented by 52.2% and 47.83% respectively. The control site had respondents from Lamu West and Lamu East Sub counties represented by 47.8% and 52.17% respectively.

Socio-demographic characteristics of the respondents

The study established that majority of the CHV respondents were women representing 9.3% followed by men at 40.7%. In terms of marital status most of the respondents (78%) were married while 13.6% were single. The study established that the highest number of respondents (36.3%) were between the age of 30-39 years with only 3.2% above 60 years and 9.6% between 20-29 years. Most (57.8%) of the respondents had a primary level of education while 0.4% did not have any education. Slightly above half (54.2%) of the respondents were of the Muslim religion and most (51.8%) respondents were in not in any form of employment.

Training of CHVs

Training for CHVs is based on a curriculum with 13 modules. The full curriculum takes approximately three months and consists of 324 facilitator-led contact hours in a classroom setting and 160 hours of practical experience. The study found that most (78.16%) of the CHWs in the intervention site had been trained by Safaricom and PharmAccess Afya Uzazi project while most (76.53%) of the CHWs in the control site had been trained by the Lamu County Government through the ministry of health as shown in Figure 1.

The respondents were also asked on the frequency and duration of trainings. Key to note is that most of the respondents in the intervention area responded that they had attended more training after the initial training as shown in Table 1.

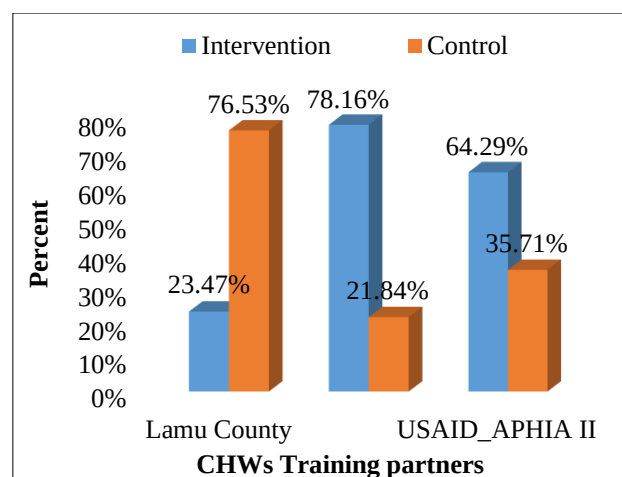


Figure 1: CHWs training partners in Lamu County.

Table 1: Attendance of other trainings apart from the initial training.

Other trainings after initial capacity development program	Community unit type (%)	
	Intervention	Control
Yes	78.03 (n=108)	21.97 (n=29)
No	20.69 (n=24)	79.31 (n=92)

The study indicated that the majority (72.1%) of the respondents did not attend refresher courses. However, further analysis indicated 67% of the respondents in the intervention sites attended refresher courses while 56% of respondents in the control sites did not attend refresher courses ($\chi^2=10.6317$, $df=1$, $p=0.001$) as shown in the figure below. Among the respondents that reported attending refresher courses, 38.6% had attended yearly, 22.1% monthly and 11.4% quarterly.

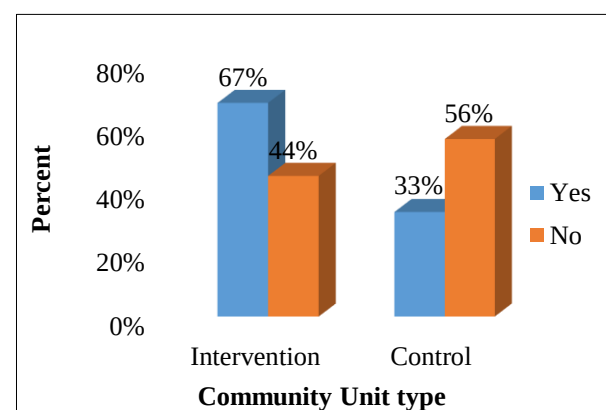


Figure 2: CHWs attendance of refresher courses.

Support and incentives provided to CHWs

The study established that the majority (76.8%) of the CHWs are selected by the community members followed

closely by Ministry of Health- Lamu County at 18.2%. Key to note is that most (66.1%) of the respondents had served as CHWs for more than five years in both intervention and control sites. With regard to the incentives given to the CHWs, most (98.8%) of the respondents felt that the community appreciates their work with only 1.2% reporting otherwise. Again, the majority (83.1%) of the respondents reported that the county government appreciate their work.

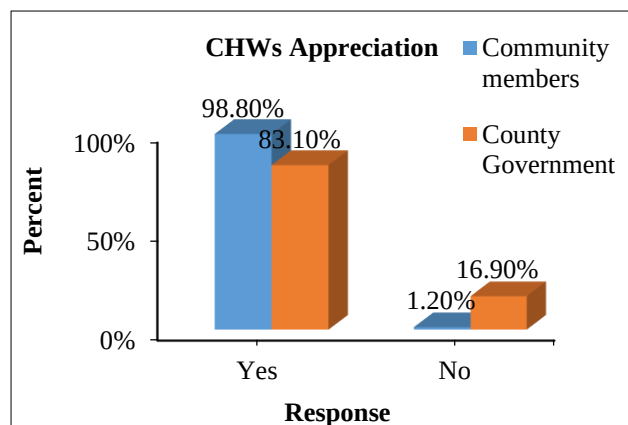


Figure 3: CHWs appreciation by community and county government.

The respondents indicated that the community appreciates the CHWs by thanking them for their services at 29.4% and through community recognition which was represented by 17.3% of the respondents. The county government on the other hand, appreciates the CHWs through the Afya Uzazi project with non-monetary incentives such as CHW kits reported by 38.8% and airtime reported by 40% of the respondents in the intervention site.

“The Afya Uzazi Salama project taught the CHVs on maternal health, hosted workshops to capacity-build them, gave them cash and airtime and phones for totaling and monthly reporting,” Public Health Officer at Muhamarani Dispensary.

When asked about the most preferred form of incentives, a good percentage (84.9%) the respondents reported that they prefer being given a monthly salary or stipend as indicated in Table 2.

Data reporting: timeliness and completeness

The research assistants sought to observe if there was any evidence of data reporting by the CHWs during the community household visits. It was observed that the majority (71%) of the respondents in the intervention sites provided written reports for the household visits using the Toto health application with only 6% not writing. On the contrary in the control site, majority (94%) did not show any evidence of reports written during the household visit with only 29% having the reports as shown in the figure below ($\chi^2=88.37$, $df=1$, $p<0.001$).

Table 2: Most preferred incentives mentioned by CHWs.

Variable	Frequency, n=251	Percentage (%)
Salary/stipend	213	84.9
Allowance/reimbursement	10	4
Provision of supplies and commodities	8	3.2
Intensive training and refresher courses	16	6.4
Recognition by the community	4	1.6

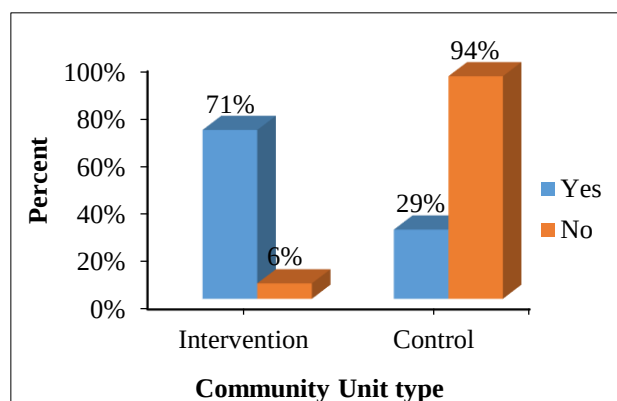


Figure 4: Evidence of report writing during household visits.

It was also established that the CHWs have channels for submitting reports whereby most of them, at 96.3% submitted their reports to the CHEW/CHA while 3.3% submitted to the health facility and 0.4% submitted to the CHC. The materials used by the CHWs to write the reports as they reported were registers at 71.2%, papers at 25.5%, notebook at 2.9% and chalkboards at 0.4%. Further analysis indicated that most CHWs in the intervention site used the register at 59.5%. Most (77.4%) of the respondents stated that the reporting tools were available to them while 22.6% of them reported otherwise. Some of the reporting tools presented by the CHWs who the service delivery had the logbook (MOH 514), CHW household register (MOH 513), monthly CHEW report (MOH 515) and community referral form (MOH 100). Regarding data quality checks during report writing, most (74%) of the CHWs in the intervention site reported that they share their reports with other CHWs and CHC for cross referencing before submitting while majority (60%) of the CHWs in the control site reported that they do not cross reference their reports ($\chi^2=22.36$, $df=1$, $p<0.001$).

Health system factors affecting performance of CHWs

Each CHV should receive supportive supervision monthly from a CHEW, at either the health facility or in the

community. The supervision consists of training, review of reports, and household visits with a CHEW. CHEWs follow a checklist to ensure quality supervision. From the evaluation, the majority (89.6%) indicated that they are supervised during normal household visits and stipulated that in the last one month most (54.2%) had been supervised once and others twice and thrice at 36.9% and 4% respectively. Only 4.4% of the CHWs had not been supervised in the last one month. Majority (97.8%) of the respondents reported that the main supervisor was the CHEW and 2.2% of the respondents reported the Public Health Officer as the main supervisor. Almost all the respondents represented by 98.7% responded that they get feedback from their supervisors and are satisfied with the support and attention they receive from the supervision. Regarding challenges experienced by the CHWs in their day-to-day work, most (79.6%) of the respondents cited financial constraints, followed by 12.8% reporting lack of transport, lack of supplies and lack of support from the community was reported by 6.8% and 0.8% respectively. However, the majority (62%) of the CHWs in the intervention site responded that they have never felt like dropping their roles despite the constraints hence the project is sustainable. On the other hand, most (74%) of the CHWs in the control site indicated that they have wished to drop their roles at some point ($\chi^2=12.032$, $df=1$, $p=0.001$).

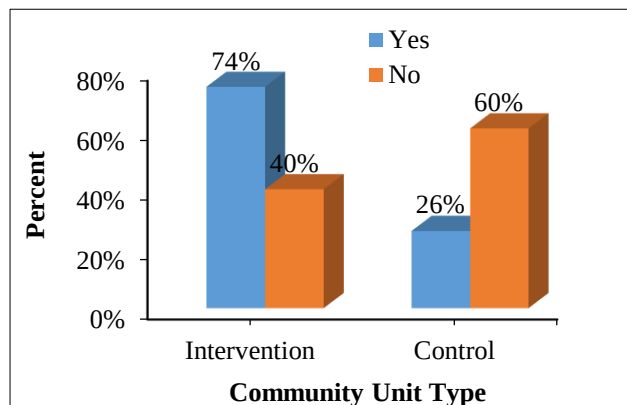


Figure 5: Cross-referencing reports before submission by the CHWs.

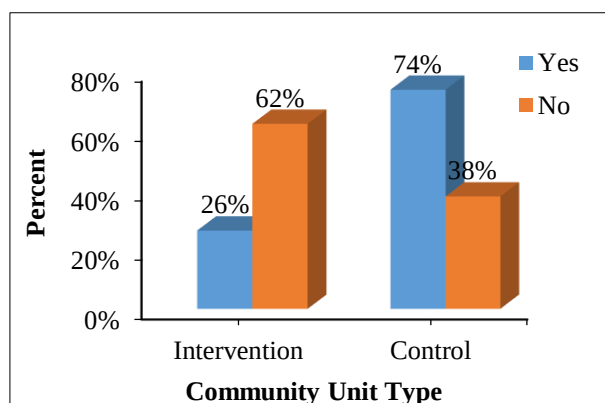


Figure 6: Loss of interest working as a CHW.

Roles of CHWs in MNCH services uptake

The main duties of CHVs are to: make visit homes, initiate dialogue with household members, determine the health situation, deliver key health messages, and undertake necessary actions; guide the community on health improvement and disease prevention; register households at frequencies stipulated in current guidelines; treat common ailments and minor injuries; and with support and guidance from CHEWs, implement protocols for community-based maternal and newborn health and integrated community case management of childhood illness. From the evaluation it emerged that slightly above half of the respondents at 52.7% in both control and intervention sites reported that they had been assigned 20 households, followed by 15.5% of them who reported having 30 households. When asked about their main responsibilities during household visits, the CHWs gave the following responses.

Table 3: Roles of CHWs during household visits.

Variable description	Community unit type (%)	
	Intervention	Control
Sharing health messages to groups	76.8 (n=96)	74.5 (n=82)
Defaulter tracing	77.6 (n=97)	71.8 (n=79)
Referring children for immunization at facility	74.4 (n=93)	66.4 (n=73)
Home visiting	100.0 (n=125)	93.6 (n=103)
Total	125	110

“...I think we should be having about 36 CUs in the entire county, but we have about 8 CUs that are very active and they are only those supported by Uzazi Salama. Even myself when I go to those communities, meet with them, you feel they are very proud of what they are doing. And this is because of what PharmAccess has been doing at the community level in terms of addressing the health of the mother and the child – both the unborn and born child. So in that aspect of ensuring that the community owns their own health and takes responsibility for their own health, activating the entire component of community strategy, it has come in handy.” (CECM Health).

The study established that 50% of the respondents in the intervention site had visited between 1 and 25 households in the last one month preceding the survey compared to 36% of the respondents in the control site who had visited the same range of households. More than half of the CHWs in the intervention site referred one and six and above patients at 57% and 62% respectively one month prior to the evaluation. Majority (74%) of the CHWs in the control site did not refer any patient one month prior to the study ($\chi^2=21.414$, $df=3$, $p<0.001$). The study established the type of MNCH services referred by the CHWs in the community as well. As indicated in the table below, the

most referred service in the intervention site and control site was family planning at 95.7% and 84.5% respectively. Key to note is that child immunization and child welfare clinics referrals were better in the intervention sites compared to control sites at 91.2% and 77.6% respectively.

“...They [CHVs] do visit us and educate us well more so after delivery how to visit clinics because of family planning and they help us a lot because they are many and the young mothers don’t know where they can seek family planning services, what to use and how to begin; so they tell us that we need to visit a clinic and get helped on how to use family planning. We do also thank those CHVs

because they have helped educate us and they visit regularly.” (FGD_Caregivers_Muhamarani).

In assessing the referral system used by the CHWs, almost all the respondents (98.4%) reported that they write a referral note to the patient with only 0.8% of the respondents reporting organizing transport to the link facility. All the respondents in the intervention and control sites reported that they have trust with the referral system and thus the caregivers. Generally, through the Afya Uzazi project, the MNCH indicators in the intervention sites improved as shown in Table 4.

Table 4: MNCH indicators for the Afya Uzazi Project.

Variable	Target	Actual	Percentage
Number of women referred to health facilities	4,500	3,177	71
Number of community members reached with MNCH information through CHVs home visits	42,000	48,361	115
Number of mothers delivering at facility (skilled deliveries)	13,948	12,869	92
Number of pregnant women attending 4 ANC visits	12,692	8,843	70
Number of children receiving full immunization	13,135	12,184	93
Number of women referred for MNCH services by the CHV	4,500	4,407	98
Number of CHVs trained on MNCH	480	490	102

DISCUSSION

Community health workers play an important role of linking MNCH services to health facilities in areas where the facilities are scarce or cultural practices hinder such health seeking behaviour. Since the introduction of the community health strategy in Kenya in the year 2006, most of the community units are not functional or partially functional due to the high attrition rates of CHWs due to lack of motivation. In Lamu County, the study outcome has clearly indicated that training of CHWs, offering incentives and supervision helps improve their day to day works and feel appreciated. Being the first link between the community and the health facility, it is paramount that they are selected by the community for the community to gain trust and own their work as shown by the study results. This resonates with the findings of a study that whenever community members are involved from the start the sense of ownership propels them to support the interventions because they appreciate the benefits especially when they view themselves as having contributed towards disease prevention in the community.¹⁴

Training of the CHWs, specifically the refresher trainings had a significant importance in the performance of CHWs in the intervention site compared to the control site. The training reminds them of their duties and keeps them on their toes to deliver. Health knowledge is one of the most important capacities to deliver appropriate and quality health messages to community members. A similar study found that refresher training, regardless of addition of defaulter tracing, was an effective intervention for increasing CHWs’ health knowledge. This is consistent with the positive association between training and CHWs’

knowledge reported by several earlier studies.^{15,16} A systematic review established that provision of refresher training was a major motivator and sustainability factor of health interventions in the community and further motivates CHWs to continue their work in the community.¹⁷

Report writing during home visits is key in tracking the performance of MNCH indicators. The study established that the CHWs that were regularly trained in the intervention site had good records of all their household visits and services offered thus it is easier to link their performance with the MNCH indicators. The need for trainings among the CHWs was clear to an extent that PharmAccess had inadvertently spilled to the control site area. Similar work on CHWs performance in LMICs has suggested that ongoing trainings to improve knowledge and skills, supportive supervision, strong coordination between healthcare facilities and CHWs, and community in terms of stakeholder engagement and managing realistic community expectations could lead to improved CHW performance.^{18,19}

Community based health workers have been found to be effective in improving the health status of the communities, therefore increasing the demand of services.¹⁶ The results show that the community health strategy is an effective approach to delivering community-based interventions. Importantly, in our study, there were significant changes in essential maternal and newborn care practices such as antenatal care attendance and skilled deliveries.

Provision of ongoing supportive supervision to CHWs is critical and can improve CHW motivation and engagement. The study indicated that most of the CHWs had been supervised by the CHEW at least once a month preceding the evaluation. They also received feedback from the supervisors and thus able to improve their service delivery. As indicated in a similar study, supportive supervision is a recommended intervention for the CHWs poor performances.⁴ Another study reported that frequent supervision along with monthly refresher training produced a positive impact on household coverage. This finding is in line with the results of several earlier studies.^{4,15,20}

CHWs high attrition rates due to lack of motivation makes it difficult to effectively implement Primary Healthcare. This study found that the CHWs were glad the community and the county appreciate their work. In addition, CHWs in intervention site reported that the County through PharmAccess gives them incentives in form of CHW kits and airtime. Similar studies have found that other nonfinancial incentives such as social recognitions and provision of commodities to be used for CHWs' activities such as bags and T-shirts were also effective in improving CHWs' performances.^{21,22} Financial incentives have recently been drawing greater attention as an effective intervention that would help reduce CHWs' attrition and improve CHWs' performances.^{23,24} This can be attributed to the fact that most CHWs reported that they would not leave their work as opposed to CHWs in the control site thus the project will be sustainable. This is like the findings of a study conducted in Uganda whereby 62% of the CHWs they interviewed from central Uganda reported being more likely to continue their role ten years from now if financial remuneration was involved.²⁵ A different study in the United States, observed that high attrition rates result in frequent replacements of CHWs overtime that lead not only to an increase in operational costs of the program, in terms of recruitment, training, deployment, and supportive supervision for freshmen CHWs, but also to a loss of opportunities for CHWs to get more professionally experienced and build greater trust relationship between community people and themselves.²⁶ These findings add to the literature supporting the importance of non-monitory factors in motivating CHWs.²⁷ Lack of incentives to motivate CHWs and lack of supervision have been reported in previous research as major barriers to sustainability of community health interventions.^{28,29}

The study established that the CHWs in the intervention and control sites were conducting home visits, defaulter tracing and immunization referrals even though the outcome was better in intervention sites. The referral pattern was significant, the majority of CHWs in the control site did not refer any patient a month prior to the evaluation. CHW program is one of the effective interventions in improving maternal and child health (MCH) outcomes.³⁰ Most of the referred MNCH services were family planning, Antenatal Care and child

immunization hence improve these indicators in Lamu County.

This study was conducted limited to Lamu County, Kenya where Afya Uzazi Salama Project was being implemented by PharmAccess through Safaricom Foundation hence so could not describe the overall CHWs performance in areas without the project. The research area was also limited to the implementation of MNCH services implemented by the CHWs at the community level thus did not evaluate other services they offer.

CONCLUSION

CHWs play an important role in linking rural and hard-to-reach communities in low-resource settings with health systems and providing critical promotion and referral services. As CHW programmes scale-up globally, predicting and understanding CHW retention and characteristics are critical to programme development, planning and sustainability. The combinations of regular refresher training, supportive supervision and non-monitory incentives are the recommended as the effective interventions in improving and further sustaining CHWs' performances such as health knowledge, job satisfaction, and household coverage. Provision of airtime as an incentive and CHW kits in the intervention site is likely to have helped increase CHWs' job satisfaction while the refresher trainings are likely to have helped increase, update, and retain CHWs' health knowledge.

The Uzazi Salama program has led to improvements in key health indicators in Lamu County. Geographic areas that implement community health services have had better health indicators than those that do not. Uptake of community health services contributed significantly to improvements in antenatal care visits, deliveries by skilled birth attendants, receipt of intermittent preventive treatment for malaria during pregnancy, exclusive breastfeeding during the first six months of life, and childhood immunization coverage.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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