endline report

KENYA SIGNATURE PROGRAMME ENDLINE EVALUATION REPORT: BUNGOMA, BUSIA AND WAJIR COUNTIES

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Executive Summary

Save the Children implemented a global newborn and child survival initiative to maximise beneficial outcomes for children and achieve health breakthroughs, for reducing maternal and newborn mortality in low income populations. As part of this initiative, Save the Children designed a health programme known as the Kenya Signature Programme (KSP) in collaboration with the county governments of Bungoma, Busia, and Wajir counties in Kenya as well as the Reproductive, Maternal Health Services, Neonatal, Child and Adolescent Health, and Community Health Services units of the country's Ministry of Health (MoH). KSP implemented evidence-based interventions throughout the continuum of care, from pregnancy to early childhood, that are both replicable and scalable, and can generate positive results for children and mothers while contributing to accelerated reductions in maternal and newborn mortality in the targeted counties. Implementation began in 2014 in Bungoma County before expansion to Busia and Wajir counties in 2015, and continued through the end of 2017. This report presents findings from an endline evaluation of this programme, to assess its processes, outcomes, and where possible, impacts of its approach, to generate evidence and lessons for future programming.

Data collection, in May and July 2018, for this endline evaluation involved: 1) structured interviews with 4,561 women ages 15 to 49 who had given birth in the previous 12 months or were pregnant during the survey (2,474 in Bungoma, 1,052 in Busia, 1,035 in Wajir), 2) health facility assessments through inventories and service statistic extraction in 87 KSP-participating facilities (40 in Bungoma, 32 in Busia, 15 in Wajir), 3) in-depth interviews (IDIs) with 18 county policymakers (8 in Bungoma, 6 in Busia, 4 in Wajir), 4) IDIs with 18 health care providers (8 in Bungoma, 6 in Busia, 4 in Wajir), 5) IDIs with 18 programme implementers (8 in Bungoma, 6 in Busia, 4 in Wajir), 6) case narratives with 24 programme beneficiaries (12 in Bungoma, 9 in Busia, 3 in Wajir), 7) six focus group discussions (FGDs) with community health volunteers (CHVs) and *boda boda* or *tuktuk* ambulance drivers (3 in Bungoma, 2 in Busia, 1 in Wajir), and 8) a programme review, which included meetings with implementers and document reviews.

Analysis of the household survey and health facility assessment data generated descriptive statistics (frequencies, percentages, mean scores), compared with baseline and midline evaluation indicators to assess changes over time. Qualitative data from IDIs and FGDs were transcribed, translated into English where appropriate, typed in Word, and analysed for content.

Key Findings

Changes in knowledge

- Knowledge of danger signs for mothers during pregnancy or postpartum improved with statistical significance between baseline and endline in all programme sites. Knowledge of at least one danger sign significantly increased, from 59 percent to 69 percent in Bungoma, from 70 percent to 84 percent in Busia, and 55 percent to 77 percent in Wajir. Knowledge of at least three danger signs also significantly increased, from 21 percent to 48 percent in Bungoma, from 42 percent to 62 percent in Busia, and 40 percent to 64 percent in Wajir. Endline knowledge of at least three danger signs for mothers was lower than the programme's targets (83% in Bungoma and 90% in Busia and Wajir) in all three states. Qualitative interviews with key figures in KSP interventions also revealed improved community awareness of maternal and newborn health (MNH).
- Unlike knowledge of maternal conditions, in Bungoma and Wajir, knowledge of newborn danger signs significantly declined between midline and endline (from 47% to 40%, and 73% to 58%, respectively), but remained nearly constant in Busia (57% and 56%, at midline and endline). There was a small but statistically significant decline in knowledge of at least three danger signs for newborns in Bungoma (from 14% at midline to 12% at endline), Busia (from 21% at midline to 12% at endline), and Wajir (27% at midline to 9% at endline).

Endline knowledge of at least three newborn danger signs was lower than the programme's targets at all three sites (83% in Bungoma, 90% in Busia, and 95% in Wajir).

It is unclear from the data what might have contributed to decline in knowledge of newborn danger signs when knowledge of maternal health conditions significantly improved over the programme period. This could, however, be the case if community sensitisation activities focused more on maternal than newborn health conditions, which was evident from the focus group discussion with CHVs in Busia.

- Knowledge of at least one of four elements of birth preparedness (emergency transport, money, disinfectant, and sterile blade or scissors) significantly significantly increased between baseline and endline in all programme sites (from 31% to 43% in Bungoma, 50% to 63% in Busia, 24% to 65% in Wajir), while knowledge of one of *five* elements of birth preparedness (with the inclusion of clothing or personal effects for mother or infant) significantly increased, from 37 percent to 69 percent in Bungoma, 57 percent to 83 percent in Busia, and 24 percent to 69 percent in Wajir. Knowledge of at least one of four elements of birth preparedness (excluding clothing and personal effects) at endline was lower than the programme's target of 60 percent in Bungoma, yet considering additional awareness of clothing and personal effects for mother or infant, results were higher than the programme's target. KSP had no targets for this indicator in Busia and Wajir. Significant improvements over time could reflect improved MNH awareness as a result of community sensitisation activities, which was evident from the focus group discussion (FGD) with CHVs in Busia.
- There was a statistically significant increase in knowledge of at least one element of proper newborn care in Busia (from 69% at baseline to 97% at endline) and Wajir (from 84% to 97%) but not in Bungoma (91% at baseline and 90% at endline). Proper newborn care includes exclusive breastfeeding, temperature management (keeping infant clothed at all times and not placing on wet surfaces), and proper umbilical cord care (washing hands with soap and water before and after handling cord stump, keeping stump exposed to air or loosely covered with clean clothes, and avoiding application of unclean substances to stump). The programme had no targets for this indicator to determine its performance. Given the high level of knowledge in Bungoma at baseline, realising and detecting significant improvements would require intense implementation of sensitisation activities and longer periods of observation.

Changes in practice

- There were statistically significant declines in women arranging at least one, of four, elements of birth preparedness between midline and endline in Busia (from 54% to 35%) and Wajir (from 89% to 52%), but not in Bungoma (44% at midline, 43% at endline), and in all programme sites there were statistically significant declines in the proportions of women arranging at least one of *five* elements of birth preparedness (from 77% to 69% in Bungoma, 77% to 70% in Busia, and 90% to 68% in Wajir). In all sites, the proportion of women with at least one—of either four or five (excluding or including clothing and personal effects for mother or infant)—element of an individual birth plan at endline was lower than the target (95% in all sites). Significant declines in birth preparedness indicators may partly reflect reduced CHV activities as KSP concluded, as FGDs with CHVs revealed that they had emphasized birth preparedness during prior household visits.
- The proportion of women making four or more antenatal care (ANC) visits significantly increased between baseline and endline in Bungoma (from 55% to 63%) and Wajir (from 24% to 65%), but not in Busia (69% at baseline and 71% at endline). The proportion of women with four or more ANC visits surpassed the programme's target of 44 percent in Bungoma and reached the Busia target of 70 percent, but did not meet the target of 70 percent in Wajir. There were statistically significant increases in women's first ANC visits during their first trimester of pregnancy, in Bungoma (from 22% to 30%) and Wajir (from 11% to 26%), but not in Busia (from 28% at baseline to 30% at endline), although overall levels remained low. There were no targets for this indicator in any county. Data from facility records show that the number of women with four or more ANC visits in participating facilities declined in 2017 in all programme sites, corresponding to the period of the public health care worker strike.

- The proportion of women delivering in a health facility significantly increased between baseline and endline in Bungoma (from 56% to 74%) and Wajir (29% to 40%), but not in Busia (78% at baseline and 80% at endline). There was a statistically significant increase in the proportion of women assisted by a skilled health care provider (doctor, nurse, midwife, clinical officer) during delivery in Bungoma (from 53% to 78%) and Wajir (from 28% to 74%), but not in Busia (76% at baseline and 80% at endline). Skilled delivery care in Bungoma surpassed the programme's target of 55 percent at endline, but there was no target for facility delivery in the county. Facility delivery and skilled delivery care in Busia at endline were close to the county targets of 82 percent and 78 percent, respectively. In Wajir, skilled delivery care at endline was close to the target of 76 percent, while facility delivery was lower than the 90 percent target. Similar to ANC, women delivering at health facilities declined in 2017 in all programme sites, likely because of the health care provider strike.
- The proportion of mothers with infants were examined by a health care provider within 48 hours of delivery significantly increased between baseline and endline in all programme sites (from 37% to 50% in Bungoma, from 42% to 73% in Busia, and from 49% to 60% in Wajir). Similarly, the proportion of mothers examined by a health care provider within 48 hours after delivery significantly increased, from 36 percent to 45 percent in Bungoma, 30 percent to 63 percent in Busia, and from 42 percent to 73 percent in Wajir. The proportions of women receiving postnatal care (PNC) within 48 hours of delivery in Bungoma were lower at endline than the programme's target of 57 percent, while the programme had no targets for these indicators in Busia and Wajir. Data from facility records show that numbers of women accessing PNC services in intervention facilities declined in 2017 in all programme sites, partly as a result of that year's health provider strike.
- There was no statistically significant change in the proportion of mothers with complications during pregnancy or postpartum who sought care from EmONC facilities in Bungoma (38% at midline and 35% at endline) and Busia (41% at both midline and endline), while the proportion in Wajir significantly declined (from 81% at midline to 61% at endline). There was no statistically significant change in the proportion of mothers of newborns with complications who sought care from EmONC facilities in Bungoma (46% at midline and 44% at endline), Busia (29% at midline and 31% at endline), or Wajir (100% at midline and 91% at endline). The proportion of mothers seeking care at EmONC facilities for their own complications at endline was lower than the targets in all sites (80% in Bungoma, 95% in Busia, 75% in Wajir). The significant decline in care-seeking for mothers' complications in Wajir could partly be due to security challenges there, which emerged from qualitative interviews as a barrier to effectively implementing some programme activities.
- The proportion of mothers who breastfed within an hour of delivery significantly increased between baseline and endline in Bungoma (from 65% to 84%), but not in Busia (82% and 85%) or Wajir (82% and 84%). The proportion of mothers who practised at least three elements of proper newborn care, as set in the programme's performance log frame—exclusive breastfeeding, temperature management, proper umbilical cord care, and seeking care for newborn complications—did not significantly change in Bungoma (99% at both midline and endline) and Busia (99.6% at midline and 99.7% at endline), while in Wajir there was a small but statistically significant increase, from 95 percent at midline to 98 percent at endline. The proportion of mothers who breastfed within an hour of delivery in Bungoma at endline reached the programme target of 84 percent, while the proportion of women in Bungoma practising at least three elements of proper newborn care surpassed the target of 80 percent. The proportion of mothers practicing at least three elements of proper newborn care in Busia and Wajir surpassed their targets (95% in both sites), but there was no target for breastfeeding within the first hour in those two counties.

Health care expenditures

- There were statistically significant increases in proportions of households with either NHIF or community-based health insurance from baseline to endline in Bungoma (7% to 13%) and Busia (from 11% to 17%), but remained the same in Wajir (3%). In Bungoma the proportion with NHIF or community-based health insurance at endline was close to the programme's target of 16 percent, but there were no targets for Busia or Wajir.

- In Bungoma there was a statistically significant decline in women paying for delivery services in public facilities between baseline and endline (from 22% to 17%), but not in Busia (29% at baseline and 33% at endline) nor Wajir (5% at baseline and 2% at endline). The proportion of clients paying for delivery services in public health facilities at endline was higher than the programme's target 25 percent in Busia, but achieved the programme's target of two percent in Wajir, while there was no target for this indicator in Bungoma.
- There was a statistically significant increase in the proportion of households with more than 10 percent of expenditures on health care between midline and endline in Bungoma (from 40% to 60%), but not in Busia (49% at midline and 46% at endline) or Wajir (69% at midline and 64% at endline). Potentially due to health care strike in the public sector in 2017, many individuals in Bungoma sought private sector care, where they had to pay more for services, thereby increasing household expenses on health. The proportion of households with more than 10 percent of expenses on health care at endline was higher than the programme's targets in Busia and Wajir (5% at each site), and the programme had no target for this indicator in Bungoma.

Quality of care

- There was no statistically significant change in the proportion of women reporting satisfaction with PNC services they last received in all programme sites (92% at midline and 90% at endline in Bungoma, 83% at midline and 86% at endline in Busia, and 71% at midline and 80% at endline in Wajir). Satisfaction with PNC in Bungoma at endline was close to the programme's target of 92 percent, while there were no targets for this indicator for Busia and Wajir. Given the high degree of satisfaction at all programme sites at midline, realising and detecting significant improvements would require intense implementation of interventions aimed at changing this indicator, and longer periods of observation.
- Among women who reported experiencing disrespect and abuse, or dissatisfaction with PNC, there was no statistically significant change in the proportion reporting these to facility management in Bungoma (8% at midline and 5% at endline) and Busia (4% at midline and 1% at endline), while in Wajir the proportion significantly declined, from 21 percent at midline to three percent at endline. The proportions of women who reported their concerns to facility management were low compared to the numbers of women indicating concerns in all programme sites. Although the programme's target for Bungoma was 30 percent of client concerns received and addressed by facility management, it is impossible to determine with a degree of certainty whether it would have been achieved if the majority of women with concerns had reported them to management. The programme did not have a target for this indicator for Busia and Wajir counties.

Variations among sub-groups

- Significant improvements in some of the indicators of MNH knowledge and practices were not uniform across all sub-groups of women, with some of the sub-groups that face greater challenges with accessing services experiencing no significant change. There was, for instance, no statistically significant change in the proportion of women making four or more ANC visits among youngest (15 to 19 years old), uneducated and unmarried women in Bungoma. In Wajir, there was no statistically significant change in the proportion of women delivering in a health facility among youngest (ages 15 to 19) and unmarried women.

Supply and demand side indicators

- Although the number of health facilities involved in the programme was too small for meaningful statistical determination of changes in supply side indicators, findings indicate improvements in some indicators, as well as declines or no change in others, between midline and endline. These findings suggest that uniform improvements may not be feasible for all structural features of quality of care at health facilities, and some perennial health system challenges (such as adequate staffing and stocks of essential supplies) may limit the ultimate effectiveness of high impact MNH interventions. Qualitative interviews with key health sector informants (care providers and county policymakers and health managers) from the midline evaluation

revealed that the programme contributed to improved provider case management skills, along with improved budgets, commodities, health information, and infrastructure including minor renovations of delivery areas.

- Women at all programme sites more often heard of MNH information from CHVs and radio than from women's groups, outreach activities, or men's meetings (*barazas*) during KSP's three years of implementation. These findings suggest that CHVs—a programme strategy for reaching women with MNH messages—are the most accessible forms of health information in communities, but with site variations: CHVs reached close to three quarters of women in Bungoma and Busia sites but less than half of the women in Wajir. The proportion of women who obtained information from men's *barazas* (most likely from partners who attended meetings) was highest in Wajir (11%), followed by Busia (6%), and lowest in Bungoma (3%). Women obtained information from outreach activities at similar levels at all sites. Findings indicate that strategies for providing MNH information can vary, for reaching targeted audiences in different contexts.
- CHVs in all programme sites were more likely to visit mothers during pregnancy, counsel them on danger signs, advise them to seek ANC at a health facility, or advise them to deliver at a health facility rather than accompanying them for ANC or delivery. The proportions of women reporting CHV visits during pregnancy, counselling on danger signs, and advice on ANC and health facility delivery were substantially higher in Bungoma and Busia than in Wajir. The proportions of women reporting CHV accompaniment for ANC or delivery were slightly higher in Wajir than in Bungoma or Busia. These findings suggest that CHVs play a bigger role in counselling mothers on MNH issues than in accompanying them to seek care, although the extents to which they perform these functions may vary by context.

Male support

- The proportions of women reporting advice from their partners to seek ANC services or deliver at a health facility were comparable for all programme sites, ranging from 64 percent to 72 percent, but the proportions reporting accompaniment by their partners for ANC or delivery was higher in Wajir than in Bungoma or Busia. In all programme sites, partner support for MNH was stronger for decision-making than in accompanying spouses for ANC or delivery, which may reflect household decision-making dynamics.

Contextual factors

- Qualitative interviews with key figures in selected interventions—*boda boda* and *tuktuk* ambulances, CHX, KMC, and maternal and perinatal death surveillance and response (MPDSR)—revealed that funding, community and facility human resources, county policymaker involvement, engagement of other key stakeholders, community sensitisation, requisite supplies, and supportive follow up are key to acceptance, support, and successful implementation. Challenges in implementation primarily involved factors of demand and supply for health services in Kenya, including distances to care, road conditions, inclement weather, facility operating hours, insecurity at night, and limited financial and human resources. In addition, the 2017 extended strike by health care providers affected implementation. *Boda boda* and *tuktuk* ambulance systems faced unique challenges, for necessary documentation for contracting drivers' services and managing their expectations. Despite challenges, these key figures reported that these interventions contributed to improved health awareness, service provision, and health outcomes for mothers and their infants.
- These key figures and others have understood, for an intervention to yield positive outcomes, of the need for consultation and collaboration among various stakeholders including service users. They also recognise the importance of sustained commitment, appropriate knowledge and attitudes, community sensitisation, and leveraging community resources for successful implementation. Although some of these processes may be cumbersome, they are necessary not only for implementation but sustainability and scale up. These participants recognise the need for considering a programme's sustainability during the inception phase to allow sufficient time for identifying and mobilising resources for scale up or replication.

Recommendations

Findings suggest, for this programme's sustainability or scale up, several actions are necessary not only for the programme, but for the health system and its policies, as well as the communities to be served.

Community

- The finding that community sensitisation activities contributed to the successes of specific programme interventions such as CHX, KMC, and *boda boda* and *tuktuk* ambulance systems suggests that community sensitisation is key to acceptance and continued use of services, including overcoming cultural barriers to service uptake (e.g. myths about pre-term infant care).

  Action: As KSP comes to an end, county governments should consider allocating resources for continued sensitisation activities to ensure these positive health behaviours and outcomes are sustained. This could, for instance, be achieved through County Health Fund, provided for in the Public Finance Management Act, to pool resources for ensuring all activities crucial for health service provision and uptake are provided for.

- Another challenge that emerged is delayed decision-making within households, encountered even with community-based referral mechanisms such as *boda boda* or *tuktuk* ambulance systems. This suggests, to sustain or scale up positive health behaviours and outcomes observed, there is need for enhancing CHV counselling capacities at home visits, not only on the importance of seeking care, but doing so early.

  Action: A critical challenge has always been sustaining CHVs' activities, as well as former traditional birth attendants (TBAs) re-oriented as birth companions and *boda boda* and *tuktuk* ambulance drivers. Supporting these groups' access to other sources of funds in their counties (e.g. Women Fund, Youth Fund, Constituency Development Fund) may provide additional resources for sustaining their activities. To avoid the potential danger of focusing on income-generating activities at the expense of core services, these groups can be encouraged to set up savings and credit cooperative organisations (known as Saccos) to manage their income-generating activities.

- Although there were significant improvements in knowledge and practice of specific MNH conditions and services, change was not uniform among all sub-groups of women, for some outcomes. Young (under age 20), uneducated, unmarried, and poor women still face barriers to care.

  Action: Reaching young unmarried women with MNH services requires attitude shifts, both within communities and facilities, given that young people's sexual and reproductive health has always been a sensitive issue in Kenya. Lessons from attitude changes for pre-term infant care, in the KMC intervention, could be applied to changing community and health care provider attitudes towards MNH services for youth. Existing programmes such as the *Linda Mama* free maternity programme managed by NHIF can contribute to reaching these disadvantaged sub-groups, through appropriate targeting.

Programme and health system

- In-service training of health care workers and supportive supervision emerged as critical components for successful implementation of programme activities, underscoring the need for continuing medical education (CME) and supportive supervision for facility-based care providers' effective service delivery. Staff transfers, rotations, promotions, attrition, retirements, or even death emerged as key health system challenges to effective implementation of interventions such as KMC and death audits.

  Action: Resources for CME and supportive supervision could be factored in the County Health Fund.

- Key figures from programme activities mentioned financial and human resources, supplies, and physical infrastructure as essential for effective implementation, which implies that ensuring constant and consistent

availability of resources (financial, human, supply) is key to sustaining or scaling up interventions. This requires innovative strategies for mobilising resources to support sustainability or scale up.

Action: Existing resources such as *Linda Mama* free maternity, women, youth, and constituency development funds could be leveraged to support staffing and supplies in health facilities.

- The experience of implementing KSP activities indicates that strong links between health facilities and communities are key to improving health service delivery, uptake, and outcomes, and that the extent to which positive health behaviours and outcomes are sustained will depend upon whether those links are maintained or further strengthened.

  Action: Sustaining links between health facilities and communities requires financial resources, which could be constituted by leveraging existing funds (such as *Linda Mama* free maternity, women, youth and constituency development funds), and supplementing those with strategies for mobilising community resources (such as minimal contributions from community units already implemented in some areas).

Policy

- The finding that continuous engagement with key stakeholders is necessary for effective implementation suggests that advocacy and constant engagement with county policymakers for increased resource allocation is key to ensuring sustainability or scale up of interventions, especially after the programme's end. Even low cost interventions such as KMC requires resources for training providers and space at health facilities.

  Action: Technical working groups provide opportunities for engaging with key health sector stakeholders and mobilising resources for health. County governments can take the initiative of engaging various health sector stakeholders to support technical working group meetings, during which strategies for replicating or sustaining interventions can be identified.

- The other challenge to health services in communities, but which should be addressed in policy, for successful scale up or sustainability, is physical access to care including health facility infrastructure as well as road conditions.

  Action: Improving physical access to services requires coordination between county governments and the national government. It may also require both levels of government to engage potential donors, as local resources alone likely cannot adequately fund infrastructure improvements.

Conclusion

The evaluation showed significant improvements in most key programme performance indicators, including knowledge of maternal conditions, knowledge of birth preparedness, four or more ANC visits, facility delivery, skilled delivery care, PNC within 48 hours, initiation of breastfeeding within an hour of delivery, and health insurance. Although the programme did not meet its targets for some indicators, case studies of selected interventions such as *boda boda* ambulance, use of CHX gel for umbilical cord care, KMC, and maternal and neonatal death audits showed that these interventions contributed to improved health practices and outcomes for mothers and their infants. Such contributions were possible by the involvement of county policymakers, engagement of other key stakeholders, enhanced facility and community care providers, community sensitisation, requisite supplies, and supportive follow up. Sustaining or scaling up interventions will require leveraging existing resources and continuous engagement of key stakeholders.

List of Acronyms

AMREF	African Medical and Research Foundation
ANC	Antenatal Care
BEmONC	Basic Emergency Obstetric and Neonatal Care
CHEW	Community Health Extension Worker
CHC	Community Health Committee
CHV	Community Health Volunteer
CHX	Chlorhexidine
CU	Community Unit
DfID	Department for International Development
DHIS	District Health Information System
EmONC	Emergency Obstetric and Neonatal Care
ESRC	Ethics and Scientific Review Committee
FANC	Focused Antenatal Care
FGD	Focus Group Discussion
GSK	GlaxoSmithKline
HRH	Human Resources for Health
IDI	In-depth Interview
IEC	Information, Education and Communication
IMR	Infant Mortality Rate
KMC	Kangaroo Mother Care
KNBS	Kenya National Bureau of Statistics
KPIs	Key Programme Performance Indicators
KSP	Kenya Signature Programme
MMR	Maternal Mortality Ratio
MNH	Maternal and Newborn Health
MoH	Ministry of Health
MPDSR	Maternal and Perinatal Death Surveillance and Response
MTMSG	Mother-to-Mother Support Group
MVA	Manual Vacuum Aspiration
NCS	Newborn and Child Survival
NGO	Non-governmental Organization
NHIF	National Hospital Insurance Fund
NMR	Neonatal Mortality Rate
PLAC	Participatory Learning and Action Cycle
PNC	Postnatal Care
SBA	Skilled Birth Attendance
SSA	Sub-Saharan Africa
TBA	Traditional Birth Attendant
TWG	Technical Working Group
UMR	Under-five Mortality Rate
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VSLA	Village Savings and Loaning Association
WHO	World Health Organisation

Background

Introduction

Although there has been progress in reducing under-five mortality rates in many sub-Saharan African (SSA) countries, maternal and newborn mortality rates have remained largely unchanged in many places. Nearly 4.7 million mothers, newborns, and children under five years of age die every year in the region, while 265,000 mothers die due to complications from pregnancy and childbirth, 1,208,000 infants die before they reach one month of age, and 3,192,000 children who survive their first month die before their fifth birthday (Victora et al. 2016). Newborn health and survival is highly dependent upon maternal health, with more than 75 percent of all maternal deaths and 29 percent of neonatal deaths within the intrapartum period (Kinney et al. 2010, Liu et al. 2012). For a newborn, the first week of life is the most critical: 75 percent of all neonatal deaths are during the first seven days of life (WHO 2016). Kenya's neonatal mortality rate (NMR) is 22 deaths per 1,000 live births, while infant mortality is at 39 deaths per 1,000 live births, and under-five mortality is at 52 deaths per 1,000 live births (KNBS et al. 2015). About one in every 26 children born in Kenya dies before age one, while one in every 19 children does not survive to age five (KNBS et al. 2015). Post-neonatal mortality is at 16 deaths per 1,000 live births, while 56 percent of infant deaths are during the first month of life (KNBS et al. 2015). The country's maternal mortality ratio (MMR) is estimated at 362 deaths per 100,000 live births (KNBS et al. 2015).

To contribute to reductions in maternal and newborn mortality in low income populations, Save the Children implemented a global newborn and child survival initiative to maximise beneficial outcomes for children and achieve breakthroughs in their health. As part of the initiative, in 2013 Save the Children embarked on a consultative design process for a multi-country Health Signature Programme. In Kenya, the program was known as the Kenya Signature Programme (KSP), designed through a consultative process with the county governments of Bungoma, Busia, and Wajir, as well as the Reproductive, Maternal Health Services, Neonatal, Child and Adolescent Health, and Community Health Services units of the country's Ministry of Health (MoH), along with United Nations (UN) agencies (United Nations Children Fund, UNICEF; World Health Organisation, WHO; United Nations Population Fund, UNFPA), representatives of international non-governmental organisations (NGOs), and the private sector. These consultations resulted in consensus for a maternal and newborn health (MNH) focus to accelerate reductions in maternal and newborn mortality in Kenya.

KSP's overall aim was to improve the continuum of care, from pregnancy through early childhood, with a primary initiative of implementing replicable and scalable evidence-based interventions generating positive results for children and mothers, contributing to accelerated reductions in maternal and newborn mortality in the targeted counties of Bungoma, Busia, and Wajir. The programme focused on both demand and supply side interventions, as well as advocacy for improving the environments of its implementation and leveraging resources from county governments. KSP had dual goals of cost-effective increases in utilisation of quality MNH services in the targeted counties and increased complementary budget allocations and investments in quality health services by the county governments. The programme aimed to increase demand and access for quality, integrated MNH services within targeted communities, as well as increasing human and institutional capacities for quality MNH services in facilities and communities in the targeted counties, and advocating for increases in human and financial resources for health care, including efficient use and management of allocated budgets for quality MNH services. Implementation of the program began in 2014 in Bungoma County, before its expansion to Busia and Wajir counties in 2015.

This report presents findings from an endline evaluation of KSP in all three counties, to assess its processes, outcomes, and where possible, impacts of its approach, to generate evidence and lessons for future programming.

Study Context

Bungoma and Busia counties in Kenya are in the former Western province, while Wajir County is in the former North Eastern province. Bungoma County comprises nine sub-counties (Bumula, Cheptais, Kanduyi, Kimilili, Mt. Elgon, Sirisia, Tongaren, Webuye East, Webuye West), Busia has seven sub-counties (Budalangi, Butula, Samia, Matayos, Nambale, Teso North, Teso South), while Wajir has eight sub-counties (Buna, Eldas, Habaswein, Tarbaj, Wajir East, Wajir North, Wajir South, Wajir West). Bungoma County's projected 2015 population was 1.6 million, with children under five years of age accounting for 18 percent (County Government of Bungoma 2013). The 2015 projected population for Busia County was about 900,000, with children under five 18 percent (County Government of Busia 2013), and the 2015 projected population for Wajir County was 800,000 with 14 percent children under the age of five (County Government of Wajir 2013).

Available estimates showed that although nearly all mothers in Bungoma and Busia counties sought antenatal care (ANC) from a skilled provider during pregnancy (98% in both counties), fewer mothers sought four or more ANC visits (50% in Bungoma and 60% in Busia) or make their first ANC visit in the first trimester (20% in Bungoma and 19% in Busia; KNBS et al. 2015). The proportions of mothers in Wajir County who sought ANC from a skilled provider, made four or more ANC visits, or had their first visit in the first trimester were much lower (58%, 37%, 11%, respectively; KNBS et al. 2015). In addition, only 41 percent of births in Bungoma were at a health facility, with a similar proportion delivered by skilled birth attendants (doctor, nurse, midwife; KNBS et al. 2015). In contrast, 58 percent of births in Busia were in a health facility, while 59 percent were delivered by skilled providers; in Wajir only 18 percent of births were in a health facility, with 22 percent by a skilled provider (KNBS et al. 2015). According to estimates from the 2009 Kenya Population and Housing Census, Bungoma County's infant mortality rate (IMR) was 61 per 1,000 live births, with an under-five mortality rate (UMR) of 115 per 1,000 live births (KNBS 2012). The corresponding IMR and UMR estimates for Busia were 84 and 149 deaths, respectively, per 1,000 live births, and Wajir's IMR and UMR estimates were 121 and 158 deaths, respectively, per 1,000 live births (KNBS 2012).

KSP was implemented in purposively selected sub-counties: four in Bungoma (Bumula, Cheptais, Kimilili, Mt. Elgon), four in Busia (Nambale, Samia, Teso North, Teso South), and three in Wajir (Eldas, Wajir North, Wajir West). In each county, these sub-counties were identified with the help of county health management teams, considering health facilities' accessibility, basic MNH indices, and the health service needs of local communities.

Intervention Components

The programme's objectives were to:

1. Increase access and sustain demand for quality MNH services,
2. Improve institutional and human resource capacities of health facilities to meet this demand, and
3. Advocate for increased in county government investment and commitment for MNH.

(A detailed description of programme intensity and adaptations made are provided in appendices 2 and 3).

Demand side interventions

Using community resource persons to create demand and improve access for MNH services within communities, including;

- Activation of community units (CUs) and training community health volunteers (CHVs) and community health extension workers (CHEWS);
- Supportive supervision for CHVs, and mobilising communities and social leaders to select CHVs for training, instead of MoH identification of CHVs;

- Creation of a social media platform to aid communication among community members and health care workers;
- Creating and supporting mother-to-mother support groups (MTMSGs) to build member capacities for support of community uptake of MNH;
- Former traditional birth attendants (TBAs) were re-oriented to accompany pregnant women for skilled delivery care, and mentoring mothers during MTMSG meetings to seek MNH services;
- Engaging men through men-only meetings (*barazas*) convened to increase male participation in MNH services;
- Using community midwives (including retired midwives), who were supported in instituting community-based midwifery; and
- Community theatre outreaches, including magnate strategies (using role models or champions), and radio programmes, to raise awareness of project activities and MNH interventions.

Creating sustainability structures and addressing context specific challenges for community-based MNH services, through various innovations:

- Participatory learning and action cycle (PLAC) approaches with groups such as women, TBAs, and CHVs;
- Developing and implementing a functional community referral mechanism involving local motor bike (often called *boda boda*) or scooter (local known as *tuktuk*) drivers;
- Providing one baby blanket and one baby outfit for every mother making four ANC visits and delivering in a health facility;
- Health insurance coverage for CHVs under the National Hospital Insurance Fund (NHIF), for one year;
- Development of village savings and loaning associations (VSLAs) to provide sustainable incentives for CHVs and community health committees (CHCs); and
- Supporting CHVs with programme data collection activities, through development of a mobile platform to transmit routinely collected data.

Supply side interventions

Building the capacities of frontline health care workers by facilitating refresher and on-the-job trainings for clinical staff and regular, continuous medical education sessions. Specific activities included:

- Training frontline health care workers on basic emergency obstetric and neonatal care (BEmONC) through various workshops, to equip them with MNH skills;
- On-the-job training, supportive supervision, and clinical mentorship, focused on specific facilities;
- Establishing facility health management teams and training members on committee management;
- Supporting pre-nursing students with scholarships—conditioned upon their working in local communities after graduation;
- Forming county maternal and perinatal death surveillance and response (MPDSR) committees and training members on conducting maternal and neonatal death audits; and
- Implementing other supply side interventions such as Kangaroo Mother Care (KMC), a low cost alternative for managing pre-terms babies—in Bungoma and Busia—and use of chlorhexidine (CHX) gel for umbilical cord care, implemented in Bungoma.

Improving basic infrastructure for provision of basic emergency obstetric services: The programme supported health facilities with one-time purchases and donations of equipment to support provision of BEmONC services, including delivery beds, delivery kits, manual vacuum aspiration (MVA) kits, IPC buckets, resuscitation equipment, screens, curtains, and bedsheets, as well as information, education and communications (IEC) materials. In addition, some health facilities received water tanks, minor renovations, and solar lighting was installed in 36 facilities.

Policy and advocacy activities

This entailed creation of a caucus of key figures in each county's health sector and engaging county officials in pertinent health matters through official meetings.

TABLE 1: INTERVENTION COMPONENTS, TARGETS AND ACHIEVEMENTS

Activity	Bungoma			Busia	
	Programme target	Key achievements		Programme target	Key achievements
Demand side activities					
Using community resource persons to create demands and improve access for MNH services within communities					
Formation and activation of community health units (CUs)	120 CUs, with an estimated total of 1,200 CHVs	119 CUs formed, with a total of 1,270 CHVs		65 CUs, with an estimated total of 650 CHVs	65 units formed, with a total of 674 CHVs
Facilitate the establishment of community participatory learning and action cycles (PLAC)	120 community dialogue cycles	119 achieved		n/a	n/a
Improving community data collection by training CHVs to use mobile platforms to transmit routinely collected data	1200	1270 CHVs trained to use mobile system		650	400 CHVs trained to use mobile system
Former TBA's re-oriented to birth companions to support and mentor mothers in MTMSGs to create demand for MNH and setting up performance-based incentives for referrals by TBAs	140	342 TBAs re-oriented as birth companions		75	87 TBAs re-oriented as birth companions
Support establishment of MTMSGs, to build their capacities to demand community MNH services	700 support groups targeted	960 established		450 support groups targeted	700 established
Support community midwives' facilitation of community-based midwifery	20	20		15	12
Facilitate quarterly men's meetings (*baraza*) to discuss MNH issues	120 CUs	119 CUs		65 CUs	65 CUs
MNH messaging via radio, and community magnet theatre to support dissemination of messages on essential MNH practices	48 radio spots, estimated average of 4 per month	48 radio spots aired		48 radio spots, estimated average of 4 per month	48 radio spots aired

Creating sustainability structures and addressing context specific challenges for community-based MNH services, through various innovations					
Development and operationalisation of functional community referral mechanism	96 (80%) of CUs	Established *boda boda* referral mechanism in 75 (63%) CUs		52 CUs	A total of 23 *boda bodas*, serving 54 CUs, incorporated into programme
Baby outfit for every mother attending 4 ANC visits or delivering in a health facility; provide a baby blanket and baby outfit for every mother both delivering in a facility and making 4 ANC visits	376 per month, or 13,536 over 3 year period	11,223 newborns received baby clothes		35 health facilities included in target of 9,000 4th ANC visits and 10,000 deliveries	35 health facilities reached; 4,129 mothers attended ANC 4 times, 6,095 who delivered in a facility received baby outfits
NHIF coverage for CHVs	900 CHVs provided with NHIF for one year	KSP paid one year subscription for 659 CHVs in 4 sub-counties		650 CHVs provided with NHIF for one year	675 CHVs covered for one year
Seed grants to CUs for VSLA	120 CUs awarded seed grant for economic activities	119 CUs trained on VSLA, entrepreneurship		65 CUs awarded seed grant for economic activities	Seed grants worth £25,000 awarded to 65 CUs
Supply side activities					
Capacity building of frontline providers, by facilitating refresher and on-the-job training for clinical staff, and regular CME sessions					
Trained health care workers on BEmONC and biannual clinical mentorship in pilot facilities supported	200 providers trained in BEmONC; 10 facilities targeted for mentorship	252 providers trained in BEmONC, 25 mentors trained		120 providers targeted for BEmONC and 10 pilot facilities targeted for mentorship	128 providers trained on FANC services, 32 facilities provide BEmONC services, 7 facilities mentored
Train and establish facility health management teams and support activities	50 teams	53 facility management teams trained		35 teams, estimated to cover 50 committees	35 functional facility management teams, with a total of 65 members in 45 committees
Facilitation and training for MPDSR	50 facilities	53 facilities trained in MPDSR		105 providers	27 trainers, 105 providers and 40 CHEWs trained
Scholarships to students pursuing nursing	20	32		15	24
Improving basic infrastructure for basic emergency obstetric series					
One-time purchase and donation of equipment to support BEmONC	Targeted 50 facilities	47 facilities received basic equipment		Targeted 35 facilities	All 35 facilities received basic equipment to enable BEmONC
Minor renovations, rainwater harvesting	Targeted 53 facilities	Water tanks provided to 30 health facilities, bedside screens and curtains distributed to 46 health facilities		Targeted 35 facilities	15 minor renovations in 15 facilities, water tanks procured for 22 facilities, pharmacies in 8 facilities renovated

Solar lighting systems for health facilities	Target 20 facilities with solar lamps	Solar lighting installed in 36 facilities		Target 35 facilities	Solar lighting installed in 20 facilities
Establish KMC sites	10	9		8	8
Policy advocacy					
Facilitate quarterly technical working groups (TWGs) for MNH and support two TWG meetings per year	1 TWG, 2 meetings a year	Supported formation of 1 TWG, 3 meetings in 2016, none in 2015		n/a	n/a
Initiate formation of county health budget lobby to monitor allocation, expenditure and accountability	One group	One group formed for sustained engagement in budget process		n/a	n/a
Quarterly advocacy meetings on MNH issues	6	6		6	6
Facilitate training for community health committees on budget monitoring and for health facility committees on financial management	120 community health committees and 53 health facility management committees	Trained 119 community health committees and 53 health facility management committees		65 community health committees	65 community health committees
Advocate for mechanisms to recognise staff performing well in health facilities	One staff member every month	One staff member recognised every month, April 2015 to March 2017		1	1

n/a: not applicable.

Methodology

Study Design

Similar to baseline and endline studies, the endline study used a cross-sectional design involving quantitative and qualitative data collection. Participants were drawn from three levels: households, health facilities, and policy arenas at both county and sub-county levels. Descriptions of the baseline and midline studies conducted in 2015 and 2016 are in the respective study reports (Abuya et al. 2016, 2017). The limitations of the design and how they may affect the findings of the report are discussed in a later section of the report.

Data Collection

Data collection took place in May and July 2018 and involved:

1. A household survey among women in the communities
2. Health facility assessment
3. In-depth interviews with policymakers and health managers at the county level
4. In-depth interviews with facility-based health care providers
5. In-depth interviews with programme implementers
6. Focus group discussions with community-level service providers (CHVs and *boda boda* ambulance drivers)
7. In-depth interviews with programme beneficiaries, and
8. Programme review.

Household Survey

The household survey involved structured interviews with 4,561 women ages 15 to 49 in the three counties (2,474 in Bungoma, 1,052 in Busia, 1,035 in Wajir) who had given birth in the previous 12 months, or were pregnant at the time of the survey, to determine MNH service utilisation patterns in those communities. Participant sampling and recruitment was within households, as the survey's main purpose was to assess the level of MNH service demand and access, compared with baseline and midline. To detect a net 10 percent change from the baseline values in the probability of facility-based births in the project areas, the endline evaluation calculated the minimum required sample of 2,370 households in Bungoma, 1,068 households in Busia, and 818 households in Wajir. Assuming a 20 percent non-response rate, the evaluation targeted a total of 2,964 households in Bungoma, 1,282 in Busia, and 982 in Wajir. The number of women interviewed in Busia fell short of the minimum desired sample by 16 women, while the number of women interviewed in Bungoma and Wajir exceeded the minimum desired sample size.

Similar to the baseline and midline surveys (Abuya et al. 2016, 2017), endline survey participants were identified in two stages. The first stage included all villages in the baseline assessment that were included in programme interventions. The baseline assessment sampled villages from community units (CUs) based on their proximity to KSP-participating facilities. In the second stage, trained research teams worked with community gatekeepers (chiefs, assistant chiefs, CHVs) to purposively identify households in the sampled villages with women who met study criteria (ages 15 to 49 who gave birth in the previous 12 months, or pregnant at the time of the survey). In each identified household, the research teams briefly introduced the study to the household head or responsible adult available at the time, and if the household head agreed, the eligible woman was interviewed after obtaining their written informed consent. For households with more than one eligible member, the youngest woman was interviewed, given that younger women are likely to face greater challenges accessing MNH services.

Interviews captured information on women's background characteristics (such as age, education, marital status, household assets and amenities), childbearing experiences and intentions, as well as general and maternal and newborn health care practices.

Health facility assessment

The health facility assessment inventoried and extracted service utilisation data from 87 facilities that participated in KSP—the same facilities included at midline (40 in Bungoma, 32 in Busia, 15 in Wajir). Two facilities were faith-based (1 in Bungoma and another in Busia), while the rest were public facilities. The inventory aimed to determine levels of MNH supplies as a proxy for women's quality of care, including facility infrastructure, staffing numbers, professional skills, training in the past 12 months, and availability of equipment, commodities, test kits and basic supplies for MNH services, as well as the number of MNH clients seen in the past 12 months. Information was also captured on general facility management and whether facilities provide basic emergency obstetric care (BEmOC). Service utilisation data aimed to determine trends and patterns in uptake of key MNH services over the course of the project, including four or more ANC visits, facility delivery, and PNC within 48 hours of delivery. Monthly service utilisation data were extracted from records of participating health facilities from January 2015 through December 2017, where available. The inventories and extraction of service utilisation were by trained research assistants with clinical backgrounds, not at those facilities. Interviews with health facility managers were conducted after obtaining their written informed consents.

In-depth interviews with county policymakers and health managers

In-depth interviews (IDIs) were conducted with 18 county policymakers and health managers (8 in Bungoma, 6 in Busia, 4 in Wajir, Table 2) to assess how specific programme interventions worked, from the perspectives of policymakers and managers. IDIs specifically aimed to assess the process of implementation, document resources used, identify what worked or did not, and why, and derive lessons for future programming. Programme interventions assessed included CHX gel use for umbilical cord care (in Bungoma), KMC (in Bungoma and Busia), community referral systems (*boda boda* and *tuktuk* ambulance in all 3 programme sites), and maternal and neonatal death audit system (all 3 programme sites). Two informants were interviewed from each intervention, in each county. Participants were purposively identified with the help of programme implementers, and based upon their roles in the interventions. IDIs were conducted in English using a guide with pre-identified themes, by research assistants with training in qualitative data collection, after obtaining written consent. IDIs were audio-recorded and captured information on interviewees' roles in specific interventions, availability of resources for their implementation, fidelity of implementation, and their effectiveness, sustainability, and potential scale up.

In-depth interviews with facility-based health care providers

IDIs were conducted with 18 facility-based health care providers (8 in Bungoma, 6 in Busia, 4 in Wajir, Table 2) to assess the programme's supply side. As with policymakers and health managers, two health care providers were interviewed for each intervention—CHX, KMC, *boda boda*, death audits—in each county where an intervention was implemented. IDI participants were purposively identified with the help of programme implementers, based on their intervention roles. IDIs also explored similar topics, were conducted by the same research assistants who conducted IDIs with policymakers, and were audio-recorded with participants' consent.

In-depth interviews with programme implementers

IDIs were conducted with 18 programme implementers (8 in Bungoma, 6 in Busia, 4 in Wajir) to assess their intervention experiences. In Bungoma and Wajir, Save the Children staff were interviewed, while in Busia county employees who worked closely with Save the Children in implementation were interviewed. In all sites, implementers were purposively identified by Save the Children. Two implementers were interviewed for each programme intervention in each implementation county. These IDIs captured information similar to that collected

from the IDIs with policymakers and health care providers, and were conducted by the same research assistants who conducted the other IDIs, and were audio-recorded with participants' consent.

Focus group discussions with community service providers

Six focus group discussions (FGDs) were conducted with community service providers: One FGD with CHVs involved in the CHX gel programme in Bungoma, two with CHVs involved in KMC in Bungoma and Busia, and three with *boda boda* or *tuktuk* ambulance drivers in Bungoma, Busia, and Wajir (Table 2). FGDs for CHVs included both genders, while those with drivers involved males only. Each FGD had six to eight participants purposively identified with the help of programme implementers, based on their roles in the interventions. FGDs were conducted in Kiswahili by the same research assistants who conducted IDIs, and covered similar topics, after written informed consent from participants. FGDs were audio-recorded and facilitated by a guide with pre-identified themes.

Case narratives with programme beneficiaries

A total of 24 case narratives were conducted with women who used CHX gel for newborn umbilical cord care in Bungoma (5 cases), KMC (4 cases in Bungoma and 6 cases in Busia), and *boda boda* or *tuktuk* ambulance services (3 cases in each site, Table 2). These cases were purposively identified with CHVs' help, based upon place of delivery (home versus facility) and infant survival, for surveying varied experiences. Interviews were conducted in Kiswahili by the same research assistants who conducted the FGDs and IDIs, using a guide with pre-identified themes, and were audio-recorded with participants' consent. Programme beneficiaries were asked to tell their stories, from the time they became aware of the intervention, their experiences with the intervention, and their opinions about sustaining or scaling up the intervention.

TABLE 2: DISTRIBUTION OF QUALITATIVE INTERVIEWS

Category	Programme site	Chlorhexidine	Kangaroo Mother Care	*Boda boda/tuktuk* ambulance	Maternal and Neonatal Death Audits	Total
Case narratives with beneficiaries	Bungoma	5	4	3	n/a	**12**
	Busia	n/a	6	3	n/a	**9**
	Wajir	n/a	n/a	3	n/a	**3**
FGDs with CHVs	Bungoma	1	1	n/a	n/a	**2**
	Busia	n/a	1	n/a	n/a	**1**
	Wajir	n/a	n/a	n/a	n/a	n/a
FGDs with *boda boda/ tuktuk* drivers	Bungoma	n/a	n/a	1	n/a	**1**
	Busia	n/a	n/a	1	n/a	**1**
	Wajir	n/a	n/a	1	n/a	**1**
IDIs with health care providers	Bungoma	2	2	2	2	**8**
	Busia	n/a	2	2	2	**6**
	Wajir	n/a	n/a	2	2	**4**
IDIs with programme implementers	Bungoma	2	2	2	2	**8**
	Busia	n/a	2	2	2	**6**
	Wajir	n/a	n/a	2	2	**4**
IDIs with county policy-makers/health managers	Bungoma	2	2	2	2	**8**
	Busia	n/a	2	2	2	**6**
	Wajir	n/a	n/a	2	2	**4**

Programme review

Programme review constituted a one day, on-site meeting with programme implementers along with a thorough review of programme documents, to understand the dynamics of implementation and programme performance. Documents reviewed included programme presentations and quarterly reports.

Training of Personnel

Similar to the baseline and midline surveys, interviewers in the endline evaluation were of both genders, and most participated in the prior evaluations of the programme. Interviewers were trained for five days, covering the study's background before addressing research and interviewing skills, research ethics, study methods including respondent sampling and recruitment, questionnaire review and pre-testing, and use of electronic data collection equipment (tablets and audio recorders).

Data Management and Analysis

Data from household interviews with women was collected using tablets, and the data were transmitted to a central server, whence it was downloaded and exported to Stata for analysis. Health facility assessment data were collected on paper, entered in EpiData, and exported to Stata for analysis. Analysis of household survey and health facility assessment data entailed generating descriptive statistics (frequencies, percentages, mean scores). MNH service quality was assessed using the Donabedian model of structure, process, and outcomes, with a focus on structural features (Donabedian 1988). Results were compared with those from baseline or midline—where baseline indicators were not captured—to assess changes in key programme performance indicators, as outlined in the programme log frame, by selected background characteristics, where available, such as age, education, marital status, number of children ever born, and household wealth quintiles. Significance tests of proportions and means determined if differences between baseline or midline and endline were statistically significant (p-values below 0.05; two-tailed tests). Analysis of household survey data also generated descriptive statistics for indicators of programme performance, which were not captured in previous rounds, and Chi-square tests to determine whether these varied significantly based upon women's background characteristics.

Qualitative data were captured on paper (as notes) and audio recordings, were translated and transcribed into MS Word, before being exported into QSR NVivo 11 software for management and analysis. A thematic framework approach classified and organised data into key themes, and any emerging categories were identified during analysis. Initial coding was by two researchers with experience in qualitative data analysis. Initial themes were annotated using a set of transcripts, and the themes were used to code all data in NVivo version 11. Analysis charts were prepared for each theme and participant category, and used to identify common themes for participants.

Ethical Considerations

The study was approved by the AMREF Ethics and Scientific Review Committee (ESRC P110/2014) and Population Council's Institutional Review Board (Protocol 625), while Kenya's National Commission for Science, Technology and Innovation granted the research permit. Written informed consent was obtained from all participants before conducting interviews. Interviews were conducted in English, Kiswahili, or a local language, depending on the preferences of participants.

Results

Changes in Maternal and Newborn Health Knowledge

Maternal conditions

There was statistically significant improvement in knowledge of danger signs for mothers during pregnancy or postpartum over time in all programme sites. The proportions of women who could identify at least one pregnancy danger sign significantly increased, from 59 percent at baseline to 69 percent at endline in Bungoma ($p<0.01$), from 70 percent at baseline to 84 percent at endline in Busia ($p<0.01$), and from 55 percent at baseline to 77 percent at endline in Wajir ($p<0.01$). The proportion who could identify at least three danger signs also significantly increased, from 21 percent at baseline to 48 percent at endline in Bungoma ($p<0.01$), from 42 percent at baseline to 62 percent at endline in Busia ($p<0.01$), and from 40 percent at baseline to 64 percent at endline in Wajir ($p<0.01$). Knowledge at endline of at least three danger signs for mothers was also lower than the programme's targets in all three sites (tables 3 through 5).

Newborn conditions

The proportion of women who could identify at least one danger sign for the newborn significantly declined in Bungoma (from 47% at midline to 40% at endline; $p<0.01$), and Wajir (from 73% at midline to 58% at endline; $p<0.01$), but not in Busia (57% and 56% at midline and endline, respectively; $p=0.73$). There was also a small but statistically significant declines in the proportions of women who could identify at least three newborn danger signs in Bungoma (from 14% at midline to 12% at endline; $p<0.01$), Busia (from 21% at midline to 12% at endline; $p<0.01$), and Wajir (from 27% at midline to 9% at endline; $p<0.01$). Knowledge of at least three newborn danger signs at endline was lower than the programme's targets in all three sites (tables 3 through 5).

Birth preparedness

The proportion of women who could identify one of four elements of birth preparedness (emergency transport, money, disinfectant, sterile blade or scissors) significantly increased in all programme sites. In Bungoma the proportion increased from 31 percent at baseline to 43 percent at endline ($p<0.01$), and from 50 percent at baseline to 63 percent at endline in Busia ($p<0.01$), and from 24 percent at baseline to 65 percent at endline in Wajir ($p<0.01$). Similarly, the proportions who could identify one of *five* elements of birth preparedness (emergency transport, money, disinfectant, sterile blade or scissors, and clothing or personal effects for the mother or baby) significantly increased, from 37 percent at baseline to 69 percent at endline in Bungoma ($p<0.01$), from 57 percent at baseline to 83 percent at endline in Busia ($p<0.01$), and from 24 percent at baseline to 69 percent at endline in Wajir ($p<0.01$). Knowledge of at least one of four elements of birth preparedness (excluding clothing and personal effects for mother or infant) at endline in Bungoma was lower than the programme's target (Table 3), but if considering the added element of clothing and personal effects for mother or infant the level of knowledge was higher than the programme's target. The programme did not have a target for this indicator for Busia and Wajir counties, to determine how it performed (tables 4 and 5).

Newborn care

There was a statistically significant increase in the proportion of women who could identify at least one element of proper newborn care in Busia (from 69% at baseline to 97% at endline; $p<0.01$) and Wajir (from 84% at baseline to 97% at endline; $p<0.01$), but not in Bungoma (91% at baseline and 90% at endline; $p=0.18$). The elements include exclusive breastfeeding, temperature management (keeping infant clothed at all times and not placing infant on wet surfaces), and proper umbilical cord care (washing hands with soap and water before and after handling cord stump, keeping stump exposed to air or loosely covered with clean clothes, and avoiding application of unclean substances to stump). The programme had no targets for this indicator in any county.

Given the high level of knowledge in Bungoma at baseline, realising and detecting significant improvements would require intense implementation of sensitisation activities and longer periods of observation.

TABLE 3: CHANGES IN KEY PROGRAMME PERFORMANCE INDICATORS: BUNGOMA

Indicator	Baseline	Midline	Endline	Programme target
Knowledge of danger signs during pregnancy and in the postpartum period				
Knowledge of at least one danger sign	59%	61%	69%	83%
Knowledge of at least three danger signs	21%	57%	48%	
Knowledge of newborn danger signs				
Knowledge of at least one danger sign	n/a	47%	40%	83%
Knowledge of at least three danger signs	n/a	14%	12%	
Knowledge of birth preparedness				
Knowledge of at least one of four elements	32%	n/a	43%	60%
Knowledge of at least one of five elements	37%	n/a	69%	
Knowledge of proper newborn care practices				
Knowledge of at least one element	91%	90%	90%	n/a
Indicators of birth preparedness				
Had any of four elements of birth preparedness	n/a	44%	80%	95%
Had any of five elements of birth preparedness	n/a	43%	67%	
Antenatal care-seeking practices				
Made four or more visits	55%	69%	63%	44%
Made the first visit in the first trimester	22%	32%	30%	n/a
Delivery care practices				
Delivered in a health facility	56%	82%	74%	n/a
Assisted by skilled provider during delivery	53%	84%	78%	55%
Postnatal care within 48 hours following delivery				
Postnatal care for the baby	40%	65%	50%	57%
Postnatal care for the mother	36%	58%	45%	
Care-seeking for complications in EmONC facilities				
Care-seeking for the mother	n/a	38%	35%	80%
Care-seeking for the baby	n/a	46%	44%	
Practising of proper newborn care				
Breastfeeding the baby within the first hour	65%	80%	84%	84%
Practising at least three elements of newborn care	n/a	99%	99%	80%
Indicators of expenditures on health				
Households with NHIF or CBHI	7%	10%	13%	16%
Households with >10% of expenditures on health	n/a	40%	60%	n/a
Women paying for delivery in public facilities	22%	16%	17%	n/a
Perceptions about health care services				
Satisfaction with PNC/post-delivery care	n/a	92%	90%	92%
Reporting of client's concerns	n/a	8%	5%	n/a
Addressing of clients' concerns	n/a	6 out of 8[a]	4 out of 7[a]	30%

[a]Absolute numbers presented because of the small number of who reported their concerns to facility management; n/a: No data;

TABLE 4: CHANGES IN KEY PROGRAMME PERFORMANCE INDICATORS: BUSIA

Indicator	Baseline	Midline	Endline	Programme target
Knowledge of danger signs during pregnancy and in the postpartum period				
Knowledge of at least one danger sign	70%	70%	84%	90%
Knowledge of at least three danger signs	42%	65%	62%	
Knowledge of newborn danger signs				
Knowledge of at least one danger sign	n/a	57%	56%	90%
Knowledge of at least three danger signs	n/a	21%	12%	
Knowledge of birth preparedness				
Knowledge of at least one of four elements	50%	n/a	63%	n/a
Knowledge of at least one of five elements	57%	n/a	83%	
Knowledge of proper newborn care practices				
Knowledge of at least one element	69%	97%	97%	n/a
Indicators of birth preparedness				
Had any of four elements of birth preparedness	n/a	54%	35%	95%
Had any of five elements of birth preparedness	n/a	77%	70%	
Antenatal care-seeking practices				
Made four or more visits	69%	71%	71%	70%
Made the first visit in the first trimester	28%	32%	30%	n/a
Delivery care practices				
Delivered in a health facility	78%	84%	80%	82%
Assisted by skilled provider during delivery	76%	84%	80%	78%
Postnatal care within 48 hours following delivery				
Postnatal care for the baby	42%	66%	73%	n/a
Postnatal care for the mother	30%	62%	63%	
Care-seeking for complications in EmONC facilities				
Care-seeking for the mother	n/a	41%	41%	95%
Care-seeking for the baby	n/a	29%	31%	
Practising of proper newborn care				
Breastfeeding the baby within the first hour	82%	80%	85%	n/a
Practising at least three elements of newborn care	n/a	99.6%	99.7%	95%
Indicators of expenditures on health				
Households with NHIF or CBHI	11%	16%	17%	n/a
Households with >10% of expenditures on health	n/a	49%	46%	5%
Women paying for delivery in public facilities	29%	21%	33%	25%
Perceptions about health care services				
Satisfaction with PNC/post-delivery care	n/a	83%	86%	n/a
Reporting of client's concerns	n/a	4%	1%	n/a
Addressing of clients' concerns	n/a	0 out of 2[a]	1 out of 1[a]	n/a

[a]Absolute numbers presented because of the small number of who reported their concerns to facility management; n/a: No data;

TABLE 5: CHANGES IN KEY PROGRAMME PERFORMANCE INDICATORS: WAJIR

Indicator	Baseline	Midline	Endline	Programme target
Knowledge of danger signs during pregnancy and in the postpartum period				
Knowledge of at least one danger sign	55%	80%	77%	90%
Knowledge of at least three danger signs	40%	77%	64%	
Knowledge of newborn danger signs				
Knowledge of at least one danger sign	n/a	73%	58%	95%
Knowledge of at least three danger signs	n/a	27%	9%	
Knowledge of birth preparedness				
Knowledge of at least one of four elements	24%	n/a	65%	n/a
Knowledge of at least one of five elements	24%	n/a	69%	
Knowledge of proper newborn care practices				
Knowledge of at least one element	84%	95%	97%	n/a
Indicators of birth preparedness				
Had any of four elements of birth preparedness	n/a	89%	52%	95%
Had any of five elements of birth preparedness	n/a	90%	68%	
Antenatal care-seeking practices				
Made four or more visits	24%	74%	65%	70%
Made the first visit in the first trimester	11%	30%	26%	n/a
Delivery care practices				
Delivered in a health facility	29%	57%	49%	90%
Assisted by skilled provider during delivery	28%	72%	74%	76%
Postnatal care within 48 hours following delivery				
Postnatal care for the baby	49%	60%	60%	n/a
Postnatal care for the mother	42%	65%	73%	
Care-seeking for complications in EmONC facilities				
Care-seeking for the mother	n/a	81%	61%	75%
Care-seeking for the baby	n/a	100%	91%	
Practising of proper newborn care				
Breastfeeding the baby within the first hour	82%	95%	84%	n/a
Practising at least three elements of newborn care	n/a	95%	98%	95%
Indicators of expenditures on health				
Households with NHIF or CBHI	3%	4%	3%	n/a
Households with >10% of expenditures on health	n/a	69%	68%	5%
Women paying for delivery in public facilities	5%	5%	2%	2%
Perceptions about health care services				
Satisfaction with PNC/post-delivery care	n/a	71%	80%	n/a
Reporting of client's concerns	n/a	21%	3%	n/a
Addressing of clients' concerns	n/a	0 out of 1[a]	1 out of 1[a]	n/a

[a]Absolute numbers presented because of the small number of who reported their concerns to facility management; n/a: No data;

Sub-group variations

Further analysis shows that significant positive changes in MNH knowledge indicators were not uniform among all sub-groups of women. Bungoma's significant improvement in knowledge of at least one danger sign for mothers occurred in most sub-groups except those ages 15 to 19, those with no formal education, those who had not given birth (either due to current first pregnancy or previous pregnancy not resulting in live birth), and those from the bottom wealth quintiles (not shown). Busia's significant improvement in knowledge of at least three danger signs for mothers occurred in most sub-groups except those with no formal education, unmarried women, and those with no previous births (either due to first pregnancy or previous pregnancies not resulting in live birth), while Wajir's significant improvement in knowledge of at least three danger signs for mothers occurred in most sub-groups except unmarried women and those with no previous births (not shown). Thus, in all programme sites, population segments usually disadvantaged in service access did benefit, with some positive changes in MNH knowledge.

County variations

The highest increase from baseline to endline for knowledge of at least one danger sign for mothers during pregnancy or postpartum was in Wajir County (22%), followed by Busia (14%), and Bungoma (10%). The greatest increase in knowledge of at least *three* danger signs for mothers occurred in Bungoma (27%), followed by Wajir (24%), and Busia (20%). Wajir also recorded the highest increase in knowledge of birth preparedness (41% for knowledge of any of the four elements and 45% when personal effects for mother or infant were included); in Bungoma, these indicators increased by 11 percent and 32 percent, respectively, while in Busia, they increased by 13 percent and 26 percent, respectively. Improvements in knowledge of at least one element of proper newborn care were greatest in Busia (28%), followed by Wajir (13%), while there was no major change in Bungoma. Wajir County is located in a region historically disadvantaged in service provision, and the remarkable changes in most of the county's indicators, compared with other counties, reflects the potential of MNH programmes like KSP to make greatest impacts in marginalised settings.

Insights from qualitative interviews

The significant improvements in knowledge of maternal conditions and birth preparedness are consistent with findings from qualitative interviews with key figures in selected programme interventions, such as CHX, KMC, and *boda boda* ambulance, indicating that sensitisation activities through outreach, mass media, and household visits by CHVs contributed to improved awareness of MNH issues in communities. It does not, however, explain the statistically significant declines in knowledge of newborn danger signs, and a non-significant change in knowledge of newborn care practices in some programme sites. A potential explanation is that programme information focused more on danger signs for mothers and the need for a birth plan than on newborn danger signs. This was evident from the FGD with CHVs in Busia, who indicated that they talked to mothers about danger signs and birth preparedness, but after delivery they visited mothers to check on newborn danger signs and referred mothers and newborns to health facilities if danger signs are observed.

> As a Community Health Volunteer, first of all I will start with that mother at home. Immediately I know that she is pregnant, I will visit her, and talk to her about danger signs. I will also tell her about the importance of beginning clinic early, and not that she goes only once but she should go at least more than four times. Yeah! And as she will be going there, I will also be teaching her about the birth plan… she should have some money that she can use to buy [necessary items], or she can even get a *boda boda*…I will also educate her to have a birth companion…Once she delivers…I am going to focus on whether the child has danger signs. What are these danger signs? They include checking if the umbilical cord is bleeding, fast breath- if the child is breathing very fast, and yellow soles—when a child is born and when you look at the palms or soles of the foot they are not normal. As a volunteer, I am not a doctor, so mine is to refer her to the facility. **CHV, KMC intervention, Busia**

> Most women end up delivering in a health facility…To me, it [*boda boda* ambulance intervention] has made the community know that it is good to deliver in a health facility.
>
> ***Boda boda* ambulance driver, FGD, Bungoma**

Changes in Maternal and Newborn Health Practices

Birth preparedness

Specific elements of birth preparedness were only surveyed at midline and endline. There was a statistically significant decline in the proportions of women evincing at least one of four elements of birth preparedness in Busia (from 54% at midline to 35% at endline; $p<0.01$) and Wajir (from 89% at midline to 52% at endline; $p<0.01$), but not in Bungoma (44% at midline and 43% at endline; $p=0.65$), and there was a statistically significant decline in the proportions of women with at least one of the five elements of birth preparedness, in all programme sites, from 77 percent at midline to 69 percent at endline in Bungoma ($p<0.01$), from 77 percent to 70 percent in Busia ($p<0.05$), and from 90 percent to 68 percent in Wajir ($p<0.01$). The proportion of women

in all sites evincing at least one element—of either four or five—of an individual birth plan at endline was lower than the programme's targets (tables 3 to 5). Significant declines in indicators of birth preparedness could partly reflect reduced intensity of CHV activities as KSP came to an end, as FGDs with CHVs revealed that they had emphasised its importance during their household visits.

Antenatal care

The proportions of women making four or more ANC visits (among those who gave birth in the 12 months preceding the survey) significantly increased in Bungoma (from 55% at baseline to 63% at endline; p<0.01) and Wajir (from 24% at baseline to 65% at endline; p<0.01), but not in Busia (69% at baseline and 71% at endline; p=0.46). The proportion of women with four or more ANC visits surpassed the programme's target in Bungoma and reached the programme's target in Busia, but missed the programme target in Wajir (tables 3 through 5). The results further show statistically significant increases in the proportions of women making a first ANC visit in the first trimester in Bungoma (from 22% at baseline to 30% at endline; p<0.01) and Wajir (from 11% at baseline to 26% at endline; p<0.01), but not in Busia (from 28% at baseline to 30% at endline; p=0.50). Overall levels of initial ANC within the first trimester remained low, however. The programme did not have targets for this indicator in any county. Data from KSP facility records show that the numbers of women with four or more ANC visits in facilities declined in 2017 in all programme sites, which corresponds to the period of the strike by health care providers in the public sector (figures 1 to 3).

FIGURE 1: TRENDS IN ANTENATAL CARE UTILISATION, 2015-2017: BUNGOMA

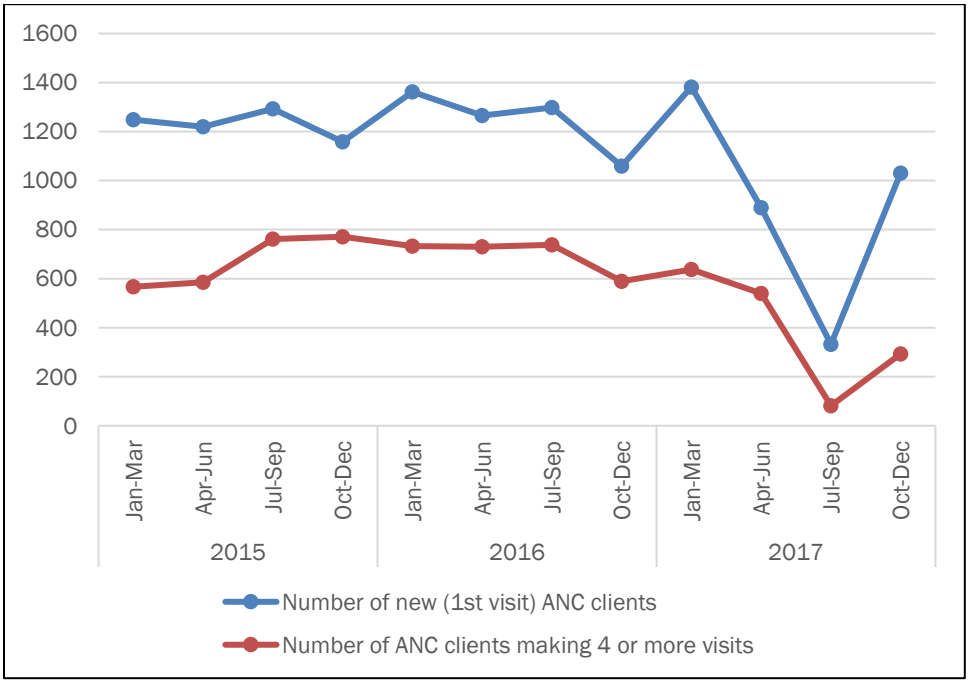


FIGURE 2: TRENDS IN ANC UTILISATION, 2015-2017: BUSIA

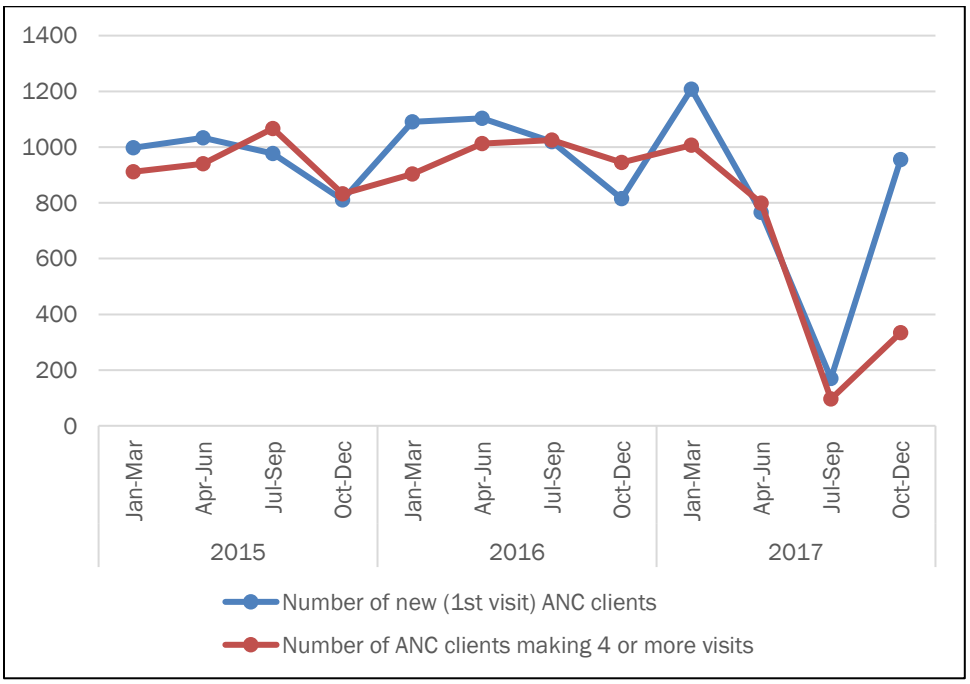
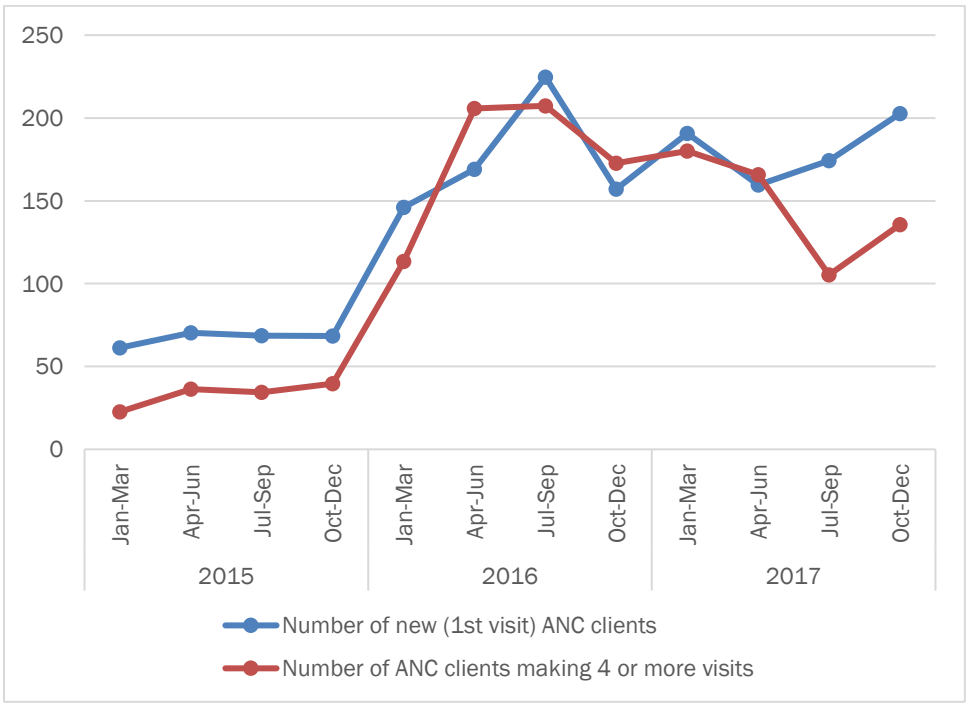


FIGURE 3: TRENDS IN ANC UTILISATION, 2015-2017: WAJIR



Delivery care

The proportion of women delivering in a health facility significantly increased in Bungoma (from 56% at baseline to 74% at endline; p<0.01) and Wajir (29% at baseline to 40% at endline; p<0.01), but not in Busia (78% at baseline and 80% at endline; p=0.53). There was also a statistically significant increase in skilled health care provider assistance (doctor, nurse, midwife, clinical officer) at delivery in Bungoma (from 53% at baseline to 78% at endline; p<0.01) and Wajir (from 28% at baseline to 74% at endline; p<0.01), but not in Busia (76% at baseline and 80% at endline; p=0.07). Skilled delivery care in Bungoma at endline surpassed the programme's target, but there was no target for facility delivery (Table 3). In Busia, endline facility delivery and skilled delivery care were close to programme targets—82 percent and 78 percent, respectively (Table 4). In Wajir, skilled delivery care at endline was close to its target of 76 percent, while facility delivery was lower than the target of 90 percent (Table 5). Similar to ANC, the number of women delivering in health facilities included in the evaluation declined in 2017 in all programme sites, partly because of the public health care provider strike that year (figures 4 to 6).

FIGURE 4: TRENDS IN DELIVERY CARE, 2015-2017: BUNGOMA

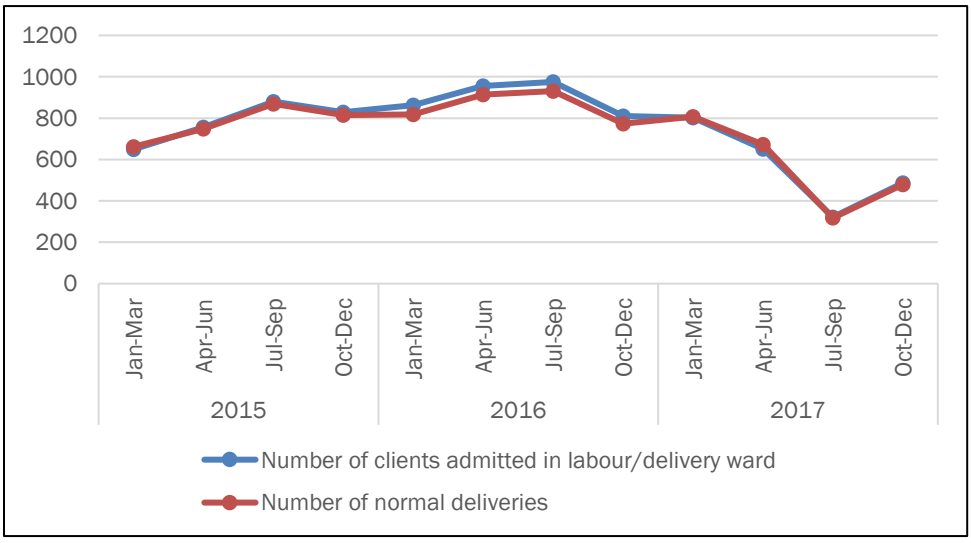


FIGURE 5: TRENDS IN DELIVERY CARE, 2015-2017: BUSIA

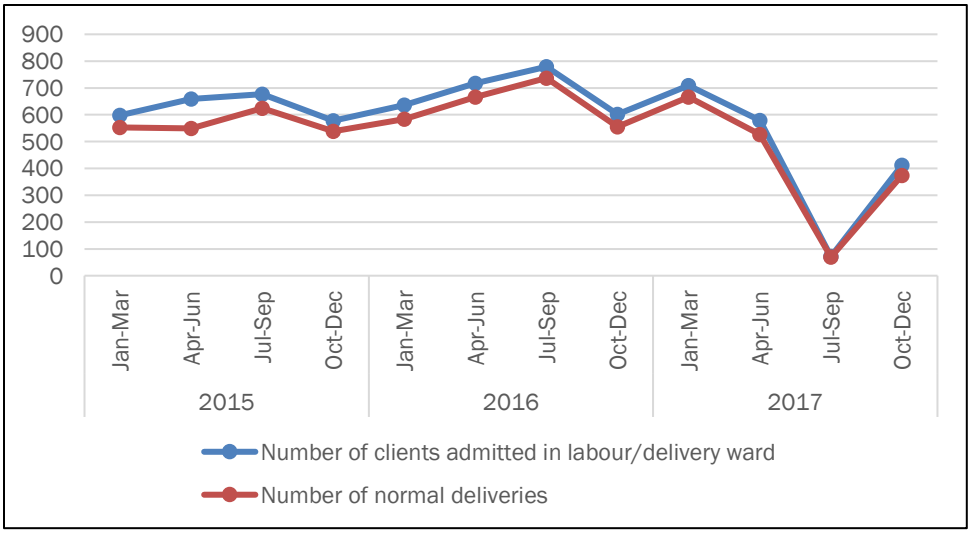
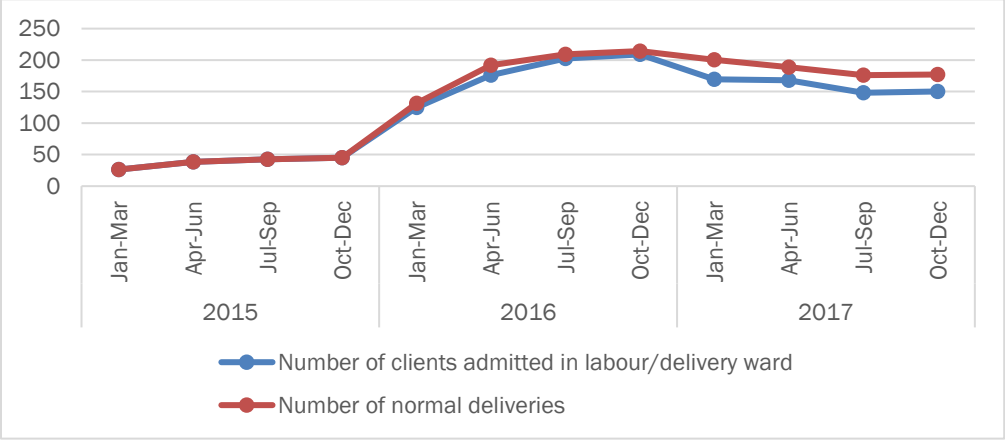


FIGURE 6: TRENDS IN DELIVERY CARE, 2015-2017: WAJIR



Postnatal care

The proportion of mothers whose infants were examined by a health care provider within 48 hours of delivery significantly increased in all programme sites, in Bungoma from 37 percent at baseline to 50 percent at endline ($p<0.01$), in Busia from 42 percent at baseline to 73 percent at endline ($p<0.01$), and from 49 percent at baseline to 60 percent at endline in Wajir ($p<0.01$). Similarly, the proportion of mothers examined by a health care provider within 48 hours after delivery significantly increased, in Bungoma from 36 percent at baseline to 45 percent at endline ($p<0.05$), from 30 percent at baseline to 63 percent at endline in Busia ($p<0.01$), and from 42 percent at baseline to 73 percent at endline in Wajir ($p<0.01$). The proportions of women receiving PNC within 48 hours of delivery in Bungoma at endline were lower than the programme's target of 57 percent (Table 3), while the programme had no targets for this indicator in Busia and Wajir (tables 4 and 5). Data from facility records show that the numbers of women accessing PNC services in KSP facilities declined, before beginning to rebound, in 2017, likely due to the public sector health worker strike that year (figures 7 through 9).

FIGURE 7: TRENDS IN PNC UTILISATION, 2015-2017: BUNGOMA

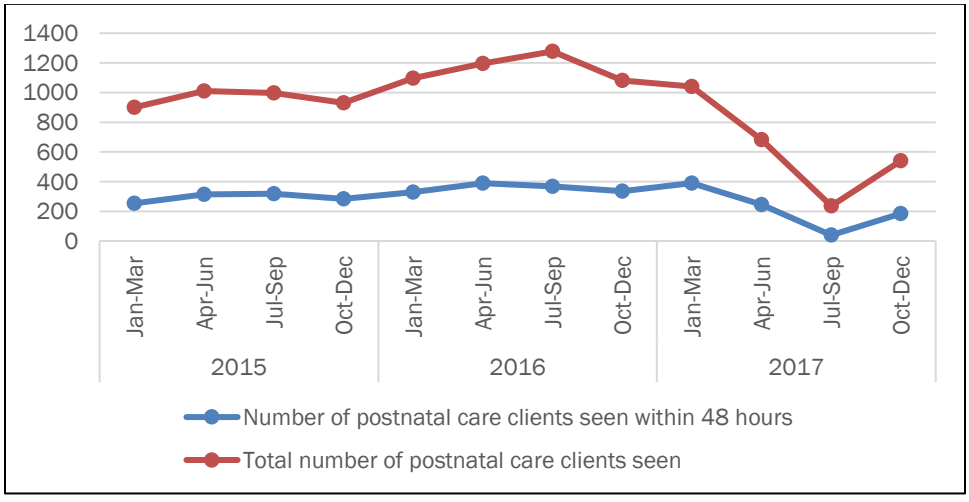


FIGURE 8: TRENDS IN PNC UTILISATION, 2015-2017: BUSIA

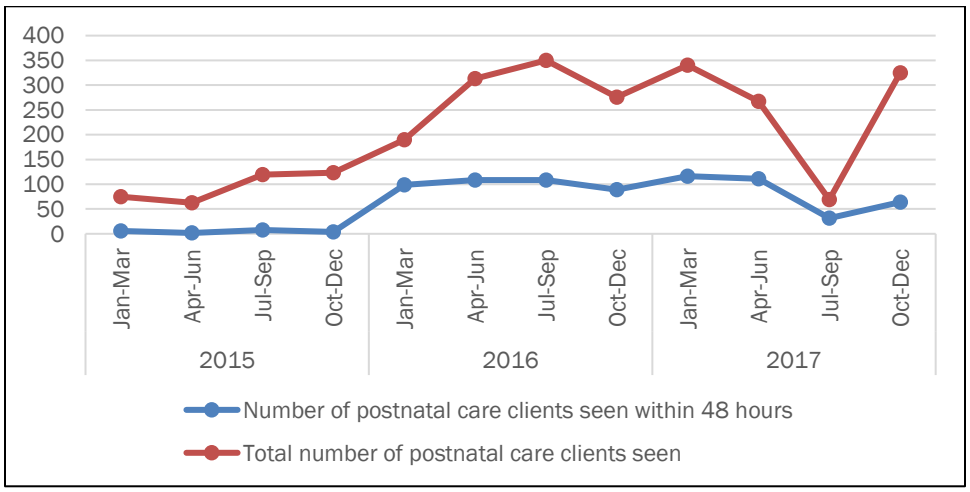
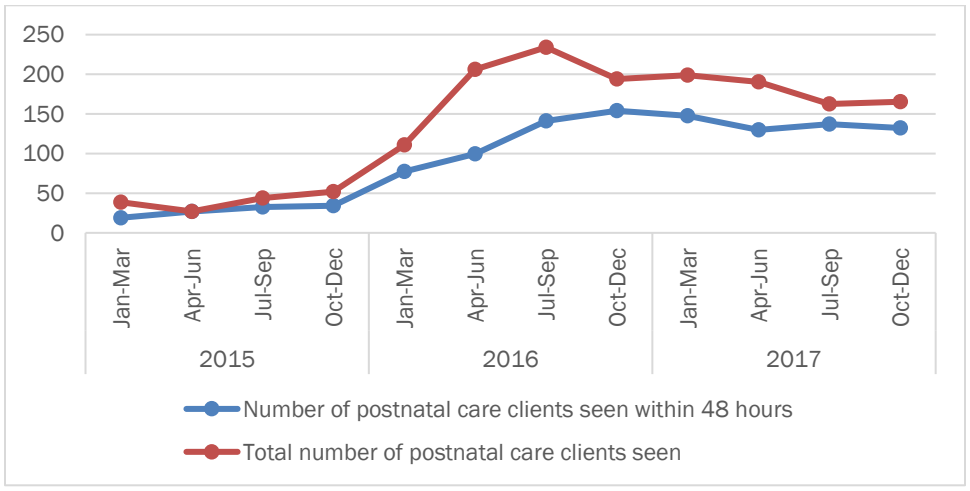


FIGURE 9: TRENDS IN PNC UTILISATION, 2015-2017: WAJIR



Care-seeking for complications

Care-seeking for complications from facilities offering emergency obstetric and neonatal care (EmONC) services was only asked at midline and endline. There was no statistically significant change in the proportion of mothers who experienced complications during pregnancy or after delivery who sought care from EmONC facilities in Bungoma (38% at midline and 35% at endline; p=0.42) and Busia (41% at both midline and endline), while in Wajir the proportion significantly declined (from 81% at midline to 61% at endline; p<0.01). There was no statistically significant change in the proportion of mothers with newborns experiencing who sought care from EmONC facilities in Bungoma (46% at midline and 44% at endline; p=0.83), Busia (29% at midline and 31% at endline; p=0.85), or Wajir (100% at midline and 91% at endline; p=0.53). The proportion of mothers seeking care from EmONC facilities for complications at endline was lower than the programme's targets in all sites (tables 3 through 5). The significant decline in care-seeking for complications for mothers in Wajir could partly be due to security challenges in the region, which also emerged from the qualitative interviews as a barrier to effectively implementing some programme activities.

Newborn care practices

The proportion of mothers who breastfed within the first hour after delivery significantly increased in Bungoma (from 65% at baseline to 84% at endline; p<0.01), but not in Busia (82% at baseline and 85% at endline; p=0.31) nor Wajir (82% at baseline and 84% at endline; p=0.50). The proportion of mothers who practised at least three elements of proper newborn care in the programme's performance log frame—exclusive breastfeeding, temperature management (keeping infant clothed at all times and not placing on wet surfaces), proper umbilical cord care (washing hands with soap and water before and after handling cord stump, keeping stump exposed to air or loosely covered with clean clothes, and avoiding application of unclean substances on stump), and seeking care for newborn complications—did not significantly change in Bungoma (99% at both midline and endline; p=0.60) and Busia (99.6% at midline and 99.7% at endline; p=0.82) while in Wajir, there was a small but statistically significant increase (from 95% at midline to 98% at endline; p<0.05. The proportion of mothers who breastfed within one hour of delivery in Bungoma at endline reached the programme's target of 84 percent, while Bungoma's proportion practising at least three elements of proper newborn care surpassed the programme's target (Table 3). The proportion of mothers who practised at least three elements of proper newborn care in Busia and Wajir surpassed the programme's targets for those counties, while there was no target for breastfeeding for either county (tables 4 and 5).

Sub-group variations

Similar to knowledge of MNH, significant improvements in some of the indicators of MNH practices were not uniform among all sub-groups of women. There was, for instance, no statistically significant change in the proportion of women making four or more ANC visits among youngest (15 to 19), uneducated and unmarried women in Bungoma (not shown). In Wajir, there was no statistically significant change in the proportion of women delivering in a health facility among youngest (15 to 19) and unmarried women (not shown), who are sub-groups that face greater challenges in accessing services.

County variations

The highest increase for indicators of ANC uptake occurred in Wajir, with its proportion of women making four or more ANC visits increasing by 21 percent, while the proportion making a first ANC visit in the first trimester increased by 15 percent. In Bungoma, these indicators increased by eight percent each, while in Busia they increased by two percent each. The highest increase in the proportion of births at a health facility, and the proportion of skilled births, also occurred in Wajir (increases of 20% and 46%, respectively). In Bungoma, those two indicators increased by 18 percent and 25 percent, respectively, while in Busia they increased by two percent and four percent, respectively. Wajir also recorded the second highest increase in proportion of infants and mothers examined by a health care provider within 48 hours of delivery (increases of 11% and 31%, respectively). The highest increases in PNC indicators for infant and mother occurred in Busia (31% and 33%, respectively), while Bungoma had the smallest increases (10% and 9%, respectively). These findings are further indication of the potential of MNH programmes like KSP to make the greatest impact in marginalised settings.

Insights from qualitative interviews

Significant improvements in health care practices such as facility delivery, skilled birth attendance, and proper newborn care, especially in Bungoma and Wajir, are consistent with findings from qualitative interviews with key figures in specific programme interventions including CHX, KMC, and *boda boda*, which showed that the interventions contributed to improved health-seeking behaviours and care practices among women. Despite non-significant improvements for some of these indicators in Busia, qualitative interviews with key actors there revealed that interventions did contribute to improved health-seeking behaviours and care practices among women in Busia. These views were consistent among various participants including beneficiaries, community service providers (CHVs and *boda boda* and *tuktuk* drivers), facility-based health care providers, programme implementers, and county policymakers and health managers.

Kangaroo mother care has really helped especially mothers who have given birth to babies who are underweight; they are able to practise it and it is good and better than an incubator. When one practises kangaroo the baby breathes well. So mothers who have that problem of underweight babies should come out and not hide, look for the health care providers and they will help you practise kangaroo and your baby will breathe well. **Beneficiary, 30 years old, KMC intervention, Bungoma**

The *tuktuk* is very much useful because it helps us seek for medical attention during labour. It takes us to the health facility so that we deliver in the maternity. Before the arrival of this *tuktuk*, we have been paying for taxis to access the health facility but now that is no more since we have free *tuktuk* that relieved us the cost of transport. Before this *tuktuk*, the community members used to hire taxis at their own cost to access the health facility, these people included those mothers seeking maternity services. ***Tuktuk* beneficiary, IDI, Wajir**

Changes in Household Expenditures on Health

There was a statistically significant increase in the proportion of households with either NHIF or community-based health insurance in Bungoma (7% at baseline and 13% at endline; p<0.01) and Busia (11% at baseline and 17% at endline; p<0.01) but not in Wajir (3% at both baseline and endline). The proportion with NHIF or community-based health insurance in Bungoma at endline was close to the programme's target of 16 percent, while there were not targets for this indicator for Busia or Wajir (tables 3 to 5).

There was a statistically significant decline in the proportion of women paying for delivery services in public facilities in Bungoma (from 22% at baseline to 17% at endline; p<0.01) but not in Busia (29% at baseline and 33% at endline; p=0.30) or Wajir (5% at baseline and 2% at endline; p=0.07). The proportion paying for delivery services in public health facilities at endline was higher than the programme's target in Busia, but reached the programme's target in Wajir while there was no target for this indicator for Bungoma (tables 3 to 5).

There was a statistically significant increase in the proportion of households with more than 10 percent of expenditures on health care in Bungoma (from 40% at midline to 60% at endline; p<0.01) but not in Busia (49% at midline and 46% at endline; p=0.48) or Wajir (69% at midline and 64% at endline; p=0.84). It could be that due to the public health care provider strike in 2017, many individuals in Bungoma sought private sector care, having to pay more, thereby increasing household expenses on health. The proportion of households with more than 10 percent of their expenses on health care at endline was higher than the programme's targets in Busia and Wajir while the programme did not have a target for this indicator for Bungoma (tables 3 to 5).

Changes in Perceptions of Health Care

Satisfaction with postnatal care services

There was no statistically significant change in the proportion of women who reported satisfaction with PNC last received in any programme site (92% at midline and 90% at endline in Bungoma, 83% and 86% in Busia, 71% and 80% in Wajir). Satisfaction with PNC services in Bungoma at endline was close to the programme's target of 92 percent, while there were no targets for Busia and Wajir (tables 3 through 5). Given the high level of satisfaction at all programme sites at midline, realising and detecting significant improvements would require intense implementation of interventions aimed at changing this indicator, and longer periods of observation.

Reporting and addressing client concerns

There was a statistically significant decline in the proportion of women reporting experience of any disrespect or abuse, or dissatisfaction with PNC, in Bungoma (from 19% at midline to 13% at endline; p<0.01) and Wajir (24% at midline and 10% at endline; p<0.01)—but not Busia (24% at midline and 20% at endline; p=0.17). There were, however, no statistically significant changes in the proportions of women who reported any disrespect or abuse,

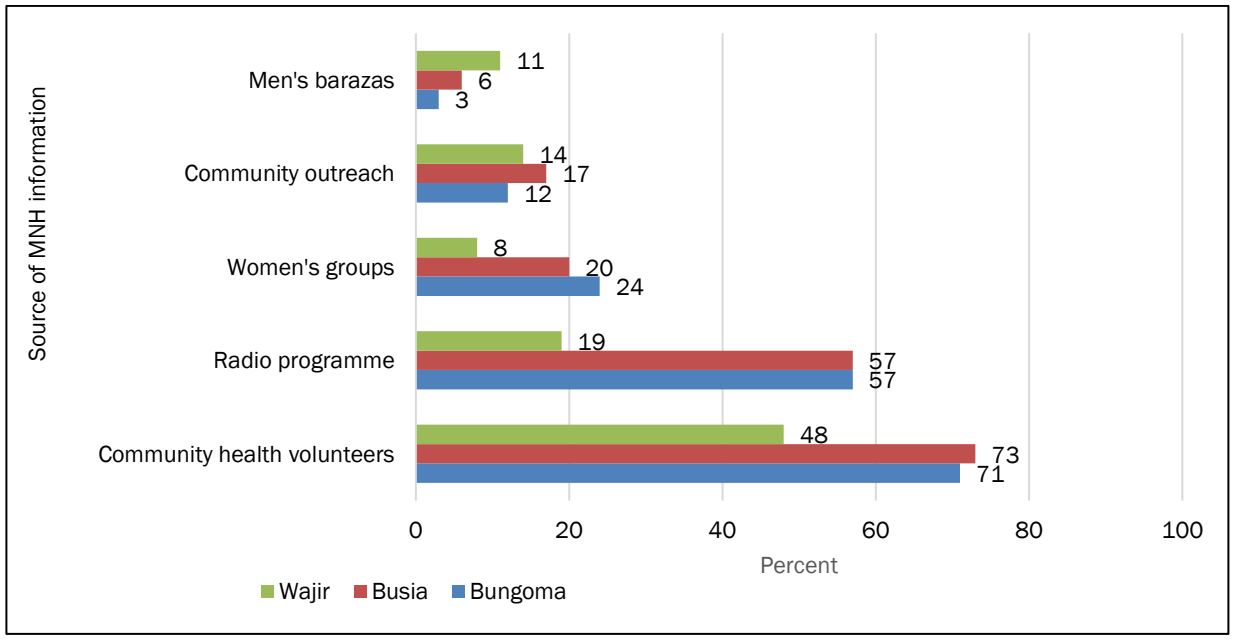
or dissatisfaction with PNC, to facility management among those with concerns in Bungoma (8% at midline and 5% at endline; p=0.32) and Busia (4% at midline and 1% at endline; p=0.20), while in Wajir the proportion significantly declined, from 21 percent at midline to three percent at endline (p<0.05).

Out of eight women in Bungoma who had reported concerns to facility management at midline, six indicated that their concerns were addressed, while at endline four of seven women who had reported concerns to facility management indicated that they were addressed. The proportion of women reporting concerns was low, however, compared with the numbers of women indicating they had concerns. It is, therefore, not possible to determine with a certain degree of confidence if the programme's target of 30 percent of clients' concerns received and addressed by facility management would have been achieved if the majority of women with concerns had reported them to management. Of two women who reported concerns to facility management in Busia at midline, neither indicated that their concerns were addressed, while at endline one woman who had reported concerns to facility management indicated that they were addressed. In Wajir, one woman who reported concerns to management at midline, and one who did so at endline, reported that their concerns were not addressed. The programme did not have a target for this indicator for the two counties.

Exposure to Maternal and Newborn Health Information

In all programme sites, women were more likely to have heard MNH information from CHVs and radio than from women's groups, outreach activities, or men's meetings (*barazas*) in the three years preceding the endline survey (Figure 10). These findings suggest that CHVs—a strategy the programme used to reach women with MNH messages—are the most accessible forms of health information in communities, but site variations show that while CHVs reached close three quarters of the women in Bungoma and Busia, less than half of women in Wajir were contacted. Although less frequently mentioned, the proportion receiving MNH information from women's groups was also greater in Bungoma and Busia than in Wajir. The proportion that obtained information from men's *barazas* (most likely from their partners who attended the meetings) was higher in Wajir (11%) than in Busia (6%) or Bungoma (3%) while the proportion obtaining information from outreach activities was comparable across sites (Figure 10). The findings indicate that similar strategies for providing MNH information may vary in terms of reaching the targeted audience in different contexts.

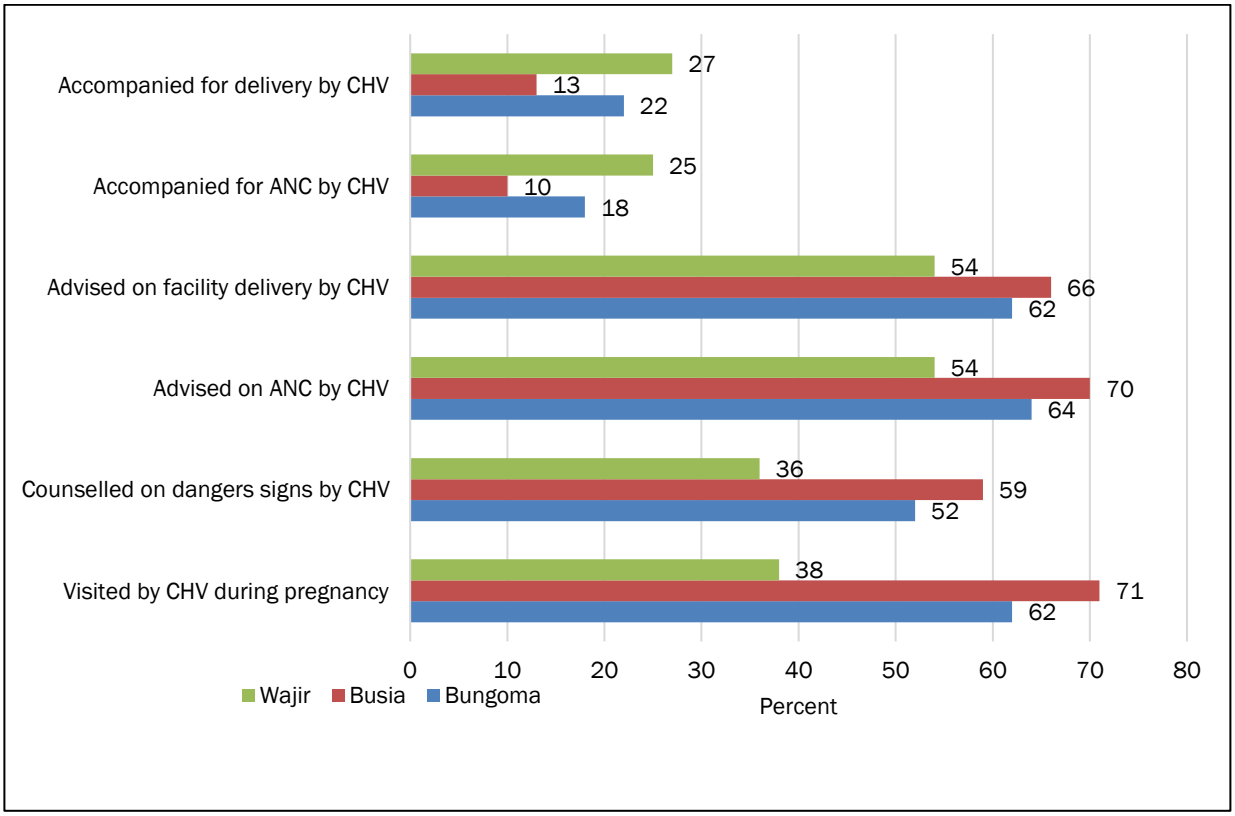
FIGURE 10: INDICATORS OF EXPOSURE TO INFORMATION, PRIOR THREE YEARS



Counselling and Support by Community Health Volunteers

In all programme sites, CHVs were more likely to visit mothers during pregnancy, counsel them on danger signs, advise them to seek ANC at a health facility, and advise them to deliver them to delivery in a health facility, than to accompany them for ANC or delivery (Figure 11). The proportions of women reporting CHV visits during pregnancy, counselling on danger signs, and advice to seek ANC and deliver in a health facility were substantially higher in Bungoma and Busia than in Wajir. By contrast, proportions of women reporting being accompanied for ANC or delivery by a CHV were slightly higher in Wajir than in Bungoma or Busia. The findings suggest that for programmes, CHVs play a better role of counselling of mothers on MNH issues rather than accompanying them to seek care, although the extent to which they perform these functions may vary by context.

FIGURE 11: COUNSELLING AND SUPPORT BY COMMUNITY HEALTH VOLUNTEERS

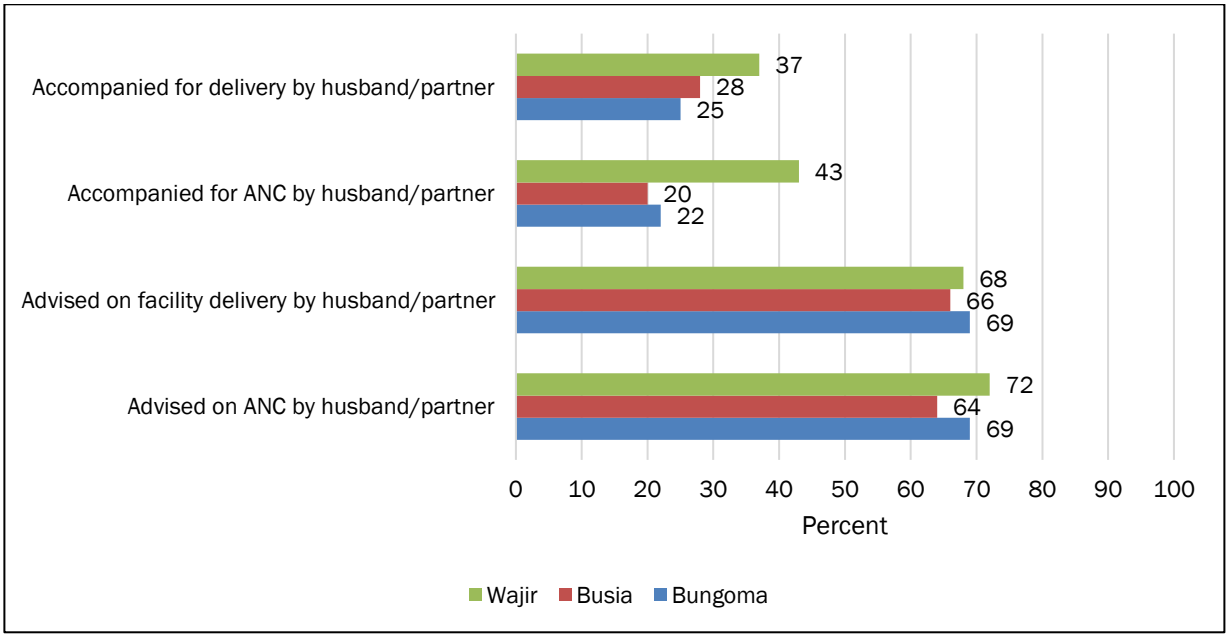


Partner Support

The proportion of women reporting being advised by their partners to seek ANC services or deliver in a health facility was comparable for all programme sites, ranging from 64 percent to 72 percent (Figure 12), but the proportion reporting accompaniment by a partners for ANC or delivery was higher in Wajir than in Bungoma or Busia.

In all programme sites, partner support for MNH was stronger for decision-making than accompaniment for ANC or delivery, which may reflect household decision-making dynamics.

FIGURE 12: PARTNER SUPPORT FOR MATERNAL AND NEWBORN HEALTH CARE



Changes in Structural Features of Quality of Services

Midline and endline structural features of quality of care were compared programme facilities assessed in the three counties (40 in Bungoma, 32 in Busia, 15 in Wajir). Findings show that in all programme sites at endline, the number of providers was below recommended national standards, a national problem rather than a challenge specific to KSP facilities. There were some indications of stability in staff retention over time in Bungoma and Busia, with the proportion of facilities reporting no providers departing in the 12 months preceding endline data collection increasing between midline and endline (from 33% to 50% in Bungoma, and from 13% to 58% in Busia). In Wajir, the proportion of facilities reporting no provider departures in the 12 months preceding data collection remained unchanged between midline and endline (20% at each time point), although there was a decline in certain staff cadres (e.g. clinical officers and nurses in sub-county hospitals), which could partly be due to security challenges in the area.

Infrastructural changes varied by type in all programme sites. There were improvements in some infrastructural facilities (such as the percentage of facilities with a functional delivery unit in Bungoma, the percentage of facilities with a functional delivery unit in Busia, and the percentage of facilities with a functional laboratory in Wajir) and lack of improvements in others (such as the number of facilities with a power back up system in Bungoma, the percentage of facilities with rain water harvesting in Busia, and the percentage of facilities with electricity in Wajir). There was also no change in indicators of availability of MNH services in Bungoma and Busia (73% of all possible MNH services were available at both midline and endline in both sites) while in Wajir, there was a decline in availability of MNH services, from 61 percent of all possible MNH services being available at midline to 52 percent at endline, which could also partly be due to security challenges in the area.

Most facilities in all programme sites reported a stockout of at least one of the clusters of MNH life-saving commodities and other essential supplies in the three months preceding data collection although this varied by type of commodity, facility tier, and programme site. There was, for instance, declines in stockouts of vaccines in Busia but not in Wajir. There was also an increase in stockouts of magnesium sulphate in Busia and surgical blades in Wajir.

Changes in facility management practices varied by indicator and programme site. There was no major change in Bungoma for some indicators (such as proportion with elected facility management committees, 82% at midline and 80% at endline), declines in others (e.g. proportion of facility management committees with an annual work plan, 92% at midline and 65% at endline), and improvements in others (e.g. proportion of facilities with mechanisms for addressing patient complaints, 62% at midline and 85% at endline). In addition, the proportion of Bungoma facilities with maternal and perinatal death surveillance and response (MPDSR) committees declined, from 97 percent at midline to 88 percent at endline. A similar pattern occurred in Busia—no major change in some indicators (e.g. proportion of facility management committees with files for all meeting minutes, 97% at both midline and endline), declines in others (e.g. proportion of facility management committees with quarterly implementation plan, 67% at midline and 48% at endline), and improvements in others (e.g. proportion of health facility management committees meeting three or more times in a year, 69% at midline and 81% at endline)—although the proportion of facilities with MPDSR committees remained unchanged between midline and endline (87% each). In Wajir, there were major changes in some facility management practices such as the proportion of facilities with elected management committees (from 33% to 60%) as well as the proportion of facilities with MPDSR committees (from 20% at midline to 73% at endline).

These findings suggest that it may not be feasible to achieve uniform improvements for all features of quality of care at health facilities, and some perennial health system challenges (e.g. staffing and stockouts of essential supplies) may limit the effectiveness of high impact MNH interventions. Findings from the programme's midline evaluation qualitative interviews with key informants in the health sector (care providers and county policymakers and health managers) showed that the programme contributed to improved provider skills in case management and health information, as well as facility budgets, commodities, and infrastructure including minor renovations where mothers deliver (Abuya et al. 2016).

Experiences with Selected Programme Interventions

Boda Boda and *Tuktuk* ambulance systems

A community-based referral system was implemented at all sites, with motorbikes (*boda boda*) used in Bungoma and Busia and scooters (*tuktuk*) in Wajir. A key challenge at all sites was identifying qualified drivers (with certificates of good conduct, a riding licence, insurance, and motorbike or scooter ownership) within communities, and managing their expectations. Other challenges were the same that affect demand and supply of health services in country, including delayed household decision-making, distance to care, roads, bad weather, facility operating hours, insecurity, and limited financial and human resources. In addition, the extended health care provider strike in 2017 affected implementation at all programme sites. Unique challenges included delays in voucher signing by health care providers, which were mentioned by drivers in Bungoma and Busia, as well as inadequate compensation, which was mentioned by drivers in all sites.

> They are so many things, because the work that we were doing had a lot of challenges, because we were penetrating even in those areas where vehicles could not reach, we could access, and you find that we do not even have security, we are moving around the community day and night. I think that we should also be provided with boots, the other thing is that we had committed ourselves for the community, but you find that the health care providers at the facility in the community don't stay there overnight, so you find that some of us go as far as 20 kilometres to look for a health facility for the mother to be attended to, and you get that you use a lot of time and the money that you have been given is less. And then you find that you will not carry the pregnant woman alone, there is someone who is accompanying her, because when a mother is in labour she cannot seat alone on the motorbike, so you are forced to carry two people to the health facility. Then when you get there, there are more challenges…at the health facility, because you get there and the health care provider refuses to sign that voucher. So you will find that you can stay there overnight, as if you have taken your own wife to deliver before going back home.
>
> ***Boda boda* ambulance driver, FGD, Busia**

Despite challenges, there was consensus among key figures (beneficiaries, drivers, health care providers, programme implementers, county policymakers) in the intervention, in all programme sites, that it enabled more mothers to access care at facilities, thereby contributing to improved MNH outcomes. Key factors that facilitated successful implementation of the intervention included involvement of county policymakers, engagement of other key stakeholders, community sensitisation, and identification of drivers from the communities.

> The *boda boda* has helped us in this community because you can be due for delivery and yet you don't have transport so you will be forced to wait for transport to get to hospital. In the process of waiting you can give birth. Again some mothers never used to deliver in health facilities but with the introduction of these *boda boda* ambulances mothers go to deliver in facilities. Some of our husbands also used to tell their wives to deliver at home but when they saw *boda boda* ambulance, they encourage their wives to deliver in facilities and to also attend clinic. **_Boda boda_ beneficiary, IDI, Bungoma**

> I am saying it worked well because most of the women before that used to deliver on their way to the facility…But with the motorbike ambulance it was just like a phone call away, a woman was just like a phone call away from the facility…the number of deliveries on the way reduced and deliveries in the facility…that is skilled deliveries in the facility greatly improved.
>
> **Health care provider, _boda boda_ system, IDI, Busia**

> I mean the achievements of the *tuktuk* ambulance are clear. Deliveries at the facility have improved; immunisation is now doing well. In view of this, the *tuktuk* has brought a lot of positives and we have never experienced any complaints from the community. **_Tuktuk_ ambulance driver, FGD, Wajir**

Kangaroo Mother Care

Poverty emerged as a challenge to KMC practice in Bungoma and Busia (it was not implemented in Wajir), especially for mothers who could not afford basic supplies. Myths surrounding pre-term infants—for instance, that they are a result of witchcraft—were also mentioned as a challenge to KMC practice in both sites, which also affected household member support in some cases. Limited space for practising KMC at some health facilities also presented a challenge. Other challenges were similar to those faced by the community-based referral system, including distance to facilities, poor roads and bad weather (especially for KMC support group meetings), as well as health facility staffing (i.e. limited staff trained in KMC, transfers of those trained, and the health care provider strike in 2017).

> Let me talk of one challenge. I used to go to the home to teach a mother how to tie skin to skin but whenever I went there she used to tell me that the husband is a drunkard and she does not have baby clothes to wrap and keep baby warm, that poverty that we talked about earlier. This becomes a challenge to me because the baby does not gain weight quickly, cries most of the time and does not breast feed. It is a challenge because I have to visit this mother many times. Again, mothers practising kangaroo lack money so we advise them to do some vegetable garden which they can sell and get some little money which they can use to get good food and be strong and be able to keep the baby warm. So I encourage them to engage in some economic activity. **CHV, KMC intervention, FGD, Bungoma**

Challenges notwithstanding, key figures (beneficiaries, drivers, care providers, programme implementers, county policymakers) at the intervention's two sites reported that it contributed to reductions in infant and maternal mortality, improved care practices for newborns by health care providers and mothers, improved care-seeking by mothers, greater bonding between mothers and newborns, improved CHV knowledge of how to manage pre-term infants, and greater male involvement in MNH issues. Similar to the community-based referral systems, key actors reported that successful implementation was facilitated by the involvement of county policymakers, engagement of other key stakeholders, and community sensitisation that addressed myths about pre-term infants. Other facilitating factors included training health care providers and CHVs on KMC, provision of reporting tools, and supportive supervision for health care providers and follow ups for mothers in the community.

> The major [achievement…is] the many lives we have been able to save. The pre-terms, now we have seen, are able to survive who would otherwise have died previously but with the KMC and the limited resources for [acquiring] incubators and all that, now we can be able to see pre-terms being saved,

yeah, that is the major one…And another achievement, yeah, like I said again having the KMC indicators in the neonatal register, having convinced the national policymakers to include the KMC indicators in the neonatal register. So when they revise the DHIS 2, I hope now the indicators will have the [column for] reporting. Then also having the guidelines that we have, the KMC implementation guidelines…we also had developed the pre- and in-service guidelines for the various institutions. The nurses will be able to start when they are in college; they learn about KMC as opposed to learning [about] it when they are in practice. Then having a scale up plan in many Counties is also a plus because now it is being taken up and it is being talked about in various forums.

Programme implementer, KMC intervention, IDI, Bungoma

Even me, I am impressed with KMC because I have seen that in my village, especially the men recognize me very much because of this work and when there is a pregnant woman in the home when she has any complaints for example like an illness, I find that the husband refers her to me first before she goes to the health facility. So I feel like they really recognize us. You know it is very difficult as I understood it in the past, the men didn't follow up on issues of pregnancy, and they would just think that my work is to go to the clinic but now I see that they recognize me. Even sometimes when I am going round in the village even when I am in a village that is not mine, you will find the men telling me, 'You've not visited your person'. That makes me feel happy. **CHV, KMC intervention, FGD, Busia**

Chlorhexidine gel for umbilical cord care

The CHX programme was implemented only in Bungoma, with selected health care workers trained as KMC champions while CHX gel for umbilical cord care was piloted in 21 public health facilities, under a managed access programme. The CHX programme enabled early access to 7.1 percent chlorhexidine digluconate (to release 4% chlorhexidine) in a topical gel for a controlled population. The programme trained health care providers, developed and disseminated IEC materials on CHX, and provided the medication at the 21 facilities. Health care providers at participating facilities were trained on CHX provision and reporting of adverse events. Community midwives, CHEWs, CHVs, and birth companions were also trained on CHX and asked to disseminate information on it in their communities, in addition to encouraging mothers who gave birth at home to visit facilities for the medication. Posters on CHX were developed for display at the facilities.

Participants reported that effective implementation required financial and human resources, supplies (CHX and IEC materials), and technical support. Intervention challenges were similar to those faced by the community-based referral system and KMC, in terms of access to facility-based care such as inclement weather, poor roads, rugged terrain, and insecurity, especially at night. Other challenges were unique to specific contexts. One beneficiary who participated in IDIs mentioned delayed cord separation as a challenge, as her infant's cord took 10 days to heal. Another beneficiary not provided adequate information by her health care provider considered that oversight as a major challenge and something that needs to be addressed to improve proper use. CHVs who participated in the FGD reported that CHX was unavailable during their training and only procured later, and that no funds were offered to facilitate transport and lunch. Health care providers who participated in IDIs mentioned challenges associated with training of some, but not all, health care staff, and failure by some to document medication provision, and lack of involvement of faith-based or private health care providers.

Interviewer: At first, did she explain why she was applying the medicine on the baby?

Respondent: No she did not. She just applied it first because they were handling the baby. They applied some ointment on the baby's eyes, then she applied another on the cord. So when I went to the ward they brought the medicine to me. It was the one that they had used on the baby. They did not explain anything at that particular moment and that particular day I was supposed to be discharged. So, before I left I asked how the medicine was going to be administered. So I asked how many times and how the medicine was to be administered.

Interviewer: Did she tell you?

Respondent: Yes, but she only told 'mara tatu hivi kwa siku' [three times a day] and apply it at the base.

Interviewer: Why did you accept to be given a medicine and did not insist to be told on how to apply it?

Respondent: I insisted but the nurse who was on duty did not have time. This was at the maternity. Even other mothers feared her and were even afraid to ask her but I just gained the courage to ask her. She told me to apply it three times as she walked away. The way she responded was rude and I did not think she was fair. **CHX beneficiary, IDI 1, Bungoma**

Everyone interviewed about the CHX intervention was unanimous that it contributed to positive health outcomes for newborns, including fast cord healing, reduced infections, and reduced neonatal deaths. They also reported that the intervention contributed to increased uptake of health care services, especially facility delivery. As with the community-based referral system and KMC, key figures in the intervention reported that the involvement of county policymakers, engagement of other key stakeholders, community sensitisation, availability of relevant supplies (CHX), and supportive follow ups facilitated effective implementation. Training of health care providers and CHVs also contributed to the intervention's success. CHVs were specifically trained to inform expectant mothers about ANC, health facility delivery, CHX for cord care, and proper umbilical cord care.

> With the other babies we did not have this medication. We used traditional ways to treat, we used lizard poop that is what used to be grinded and applied on the cord but the cord used to get infection I had to go to hospital for treatment. But since this medication was introduced I have not experienced the same problems of infections. **CHX beneficiary, IDI 2, Bungoma**

> This is one of the interventions which if it can be scaled up can reduce the rate of sepsis infection which is one of the leading causes of deaths, and you will find that it is a low-cost intervention because all that you require is the Counties to be able to have budget increase in their commodities. That is all you require and these are low-cost commodities which you can get at 40 or 50 [Kenya] shillings from the manufacturers because you will find the manufacturing cost is $0.28. So I think it is a low-cost intervention which can be embraced in all the Counties because now we have the national policies. What we require is the buy-in and creating awareness about the same which can be done through the media or through publications. **Programme implementer, CHX intervention, IDI, Bungoma**

Maternal and neonatal death audits

Maternal and neonatal death audits occurred in all three programme sites, with key requirements for their successful implementation including financial and human resources as well as data reporting tools. An initial challenge later overcome was that some figures did not readily embrace the process, perhaps out of fear of reprisal if a problem arose. Human resources also posed a challenge, resulting in heavy workloads for available staff, which affected documentation. Some facilities did not have adequate space for the review meetings, while some reported delays in implementing decisions of the reviews, especially those involving procurement of supplies necessary for averting maternal and neonatal deaths. The extended health care worker strike in 2017 also affected the process, while challenges with internet connectivity, for filing reports, were mentioned in Wajir.

> Then, we thought that it was a very difficult process and we were imagining that at the County level, it required that we come up with that committee. It needed a number of stakeholders because we sat down and put our heads together, and you know this issue of maternal health in Bungoma, it was in the media sometimes back whereby at [name of facility], a mother was beaten, so, we have been really having fears. So we sat and said that we must have a number of stakeholders. Others were saying no, if you bring on board people from human rights, they will just be looking for mistakes that we will be making. But we insisted that they must be there and they must be aware because some of these issues that we are facing are community-based. **County policymaker, MPDSR intervention, IDI, Bungoma**

Key intervention figures (programme implementers, care providers, county policymakers) at all programme sites, who participated in IDIs, reported that, despite a few challenges, the audit process contributed to reduced maternal and perinatal deaths because of improvements in care quality, and related provider knowledge and skills, as well as increased community awareness of the common causes of death among mothers and newborns, and how to avoid them. The process further contributed to timely reporting of events including deliveries, as well as improved communication within and between health facilities, and between health facilities and communities. There were also changes in health care staff attitudes about the audits. As with other

programme interventions, key actors reported that involvement of county policymakers, engagement of other key stakeholders, training of health care providers, community sensitisation, availability of relevant supplies (reporting tools), and supportive follow ups facilitated effective implementation.

> The major achievements I will mention one, it made the communities to be aware of the common killers of mothers and newborns in their facilities and this made them to really be on the lookout and it also enabled us to venture in to the private facilities which now embraced it so very well because it made them realise that they had gaps in the common key practices and as a result it was a good entry point for us to even help them with some of the key interventions that are trainings and mentorships that were meant to improve their technical skills towards reducing maternal and prenatal mortalities. Any other achievements I would say, once these ones began to be implemented especially in private facilities we ended up experiencing a reduction in the number of maternal and perinatal deaths, especially the perinatal deaths, but maternal is somehow dependent, perinatal deaths is where sometime the human skills come in handy; we had a good reduction in these deaths…gaps were identified at the facility and the health care providers were mentored and…this greatly improved the practices especially in the neonatal resuscitation area, and the premature babies.
>
> **Programme implementer, MPDSR intervention, IDI, Bungoma**

> The major achievement is that it has been able to reduce the maternal and neonatal deaths because now after the reviews, we are able to address such problems so that we prevent them. So they have helped to reduce the deaths. They have also helped to give out information like in the reports because some of these deaths were not being included in the reports like in the DHIS [District Health Information System].
>
> **Health care provider, MPDSR intervention, IDI, Busia**

Lessons from Selected Programme Interventions

Boda Boda ambulance system

In all programme sites, key figures in community-based referral systems (*boda boda* or *tuktuk*) learned about the importance of stakeholder engagement and community sensitisation for successful implementation. They also learned that using resources available in communities contributes to greater acceptance of an intervention. These lessons are important for overcoming possible barriers to acceptance of an intervention among potential stakeholders. *Boda boda* and *tuktuk* drivers also learned about the importance of commitment and dedication for community service and how simple interventions can make a difference in saving lives. Lessons from the referral system, by different actors in the three programme sites, are summarized in Table 6.

> You know, I was sitting and wondering if it is possible for a pregnant woman to get to the facility from this *boda boda* ambulance, and initially I would say no. But I have seen it work. I think it has informed my thinking that communities have different means of transport that they can fit themselves into. We could be having communities that are using donkeys or animal carts. So irrespective of what the different studies are saying it is not appropriate, I think it works. The other lesson that I have learnt is that, well, as you move with communities, though it is a free service, it might not all be always exciting, yes, because it took us some time to try and negotiate and discuss with the communities on getting us the names of the drivers. They didn't have any issue with the *boda boda* referral mechanism but there was interest in the selection criteria. So there is need to find ways of addressing this interest from the community.
>
> **Programme implementer, *boda boda* ambulance, IDI, Bungoma**

> You know when you look at a motorcycle and you talk of referral, to somebody it may sound funny. But you see, when you try, and it works, then you can testify that it can work. So, it worked, a motorcycle is able to transport a pregnant woman from the village to a health facility. But it needs involvement of other stakeholders…there are some areas where we have issues of insecurity, where a *boda boda* [driver] may fear leaving his house at night to refer a pregnant woman to the facility. You see now on security issue, you will find the chief is coming in to ensure that in his area there is security, that a *boda boda* can go through that village with no problem. It needs everybody to be involved. Again, if it is to be sustained, that we are saying now the household can be able to identify [a *boda boda* driver] and how they will pay. You know these households must start thinking, 'Economically are we able?' and you will

find they will start saving. They will start doing other things that can bring income so that they are able to pay the *boda boda* [driver]. So it requires other stakeholders, not health alone, not the transport system alone. **County policymaker, *boda boda* ambulance, IDI, Busia**

TABLE 6: LESSONS FROM *BODA BODA* AND *TUKTUK* AMBULANCE SYSTEMS

Actor	Programme site	Lessons
Boda boda/ tuktuk drivers	Bungoma	• Being an ambulance driver gives one courage and desire to help expectant mothers • An ambulance driver should be very gentle because he is carrying an expectant mother • An ambulance driver should not look at the status of an expectant mother before they render any service to them
	Busia	• Commitment is crucial for realising positive outcomes from an intervention • Community sensitisation and availability of resources are important for improving access to services • Timely provision of services such as those provided by *boda boda* ambulance drivers makes a difference in saving lives
	Wajir	• Volunteering one's services earns appreciation from the community and helps address community needs • Simple interventions like *tuktuk* ambulance can make a difference in saving lives
Programme implementers	Bungoma	• Communities have different means of transport that can be leveraged for emergency referrals • It is important to address community interest when you want to work with them • It is important to involve community members in implementation design There is need for counties to invest in community referral systems because most deaths occur due to delays in referral
	Busia	• It is important to think about sustainability of a programme at the time of inception • Community sensitisation and involvement is important for gaining acceptance of an intervention by intended beneficiaries • Using community resource persons helps promote ownership of an intervention
	Wajir	• Community sensitisation and involvement is important for gaining acceptance of an intervention by intended beneficiaries • Community members are always ready to accept a positive intervention when they are given appropriate information
Health care providers	Bungoma	• Having somebody very responsible within the community is important • The County government should take up the responsibility of supporting the *boda boda* ambulance drivers
	Busia	• Strengthening local structures and systems can empower communities to handle referrals and improve linkages to skilled care • Motor bike ambulance can contribute to positive health outcomes through timely referrals to skilled care
	Wajir	• Distance to care is a major challenge and cheaper alternatives can contribute to increased uptake of services
County policymakers	Bungoma	• *Boda boda* can bring a positive change in the community; the service can play a crucial role in alleviating delayed access to health care • Knowledge is power; mothers know the importance of giving birth in a facility • It is important to give information in order to obtain the good will of the community • Giving information to service providers is important because it enhances commitment
	Busia	• The success of an intervention requires stakeholder involvement at various levels • Communities are powerful systems that have the potential to significantly contribute to global, national and local health goals
	Wajir	• Using community resources contributes to greater acceptance of an intervention, even where there may be perceived cultural barriers • The system contributed to improved health-seeking behaviour and health outcomes

Kangaroo Mother Care

Similar to the community-based referral system, key figures from KMC implementation in Bungoma and Busia learned about the importance of stakeholder engagement and community sensitisation for successful implementation. Health care providers who participated in IDIs in the two sites learned about the importance of having the right attitude and skills to effectively implement KMC. Programme implementers in the two sites also learned that KMC provides an opportunity for engaging men in MNH issues while county policymakers in both sites learned that simple interventions like KMC can make a difference in saving lives. Table 7 provides a summary of key lessons from the intervention by various key actors.

> When you want to provide KMC services, you should have passion, yeah, that positive attitude. Yes, there are challenges. You have to look for means and ways to overcome the challenges that may arise. **Health care provider, KMC intervention, IDI, Bungoma**

> Especially like men, they can be fully engaged so that they know it is part of them. It is not for women, this is something a man can also do. There are those who have practised it. When they come to the meetings and you hear them talk, you feel good. So those other men who really think this thing is meant for women, they need to meet with these others that have already practised it. We have even some CHVs who are men and who have done very well and they understand the benefits of KMC and they are able to preach it at the community level. **Programme implementer, KMC intervention, IDI, Busia**

TABLE 7: LESSONS FROM KANGAROO MOTHER CARE PROGRAMME

Actor	Programme site	Lessons
CHVs	Bungoma	• Following instructions given about KMC determines the success of its practice • Underweight infants can grow as long as KMC is practiced and hygiene is observed
	Busia	• Providing adequate KMC information to mothers with pre-term infants is important for its success • Regular follow up during pregnancy and delivery helps in timely identification of mothers and newborns who require KMC
Programme implementers	Bungoma	• Investment from leaders and involvement of men are very important for the successful implementation of the intervention • KMC does not require a lot of resources to implement—people just need to be sensitised
	Busia	• Even simply interventions like KMC still require the involvement of stakeholders at various levels for successful implementation • With appropriate training for health care workers, KMC can be easily scaled up in all health facilities • KMC can be a crucial entry point for involving men on MNH issues
Health care providers	Bungoma	• KMC is good since it has helped in reducing neonatal deaths, infections in pre-terms and has enhanced survival rates • The programme has helped increase mother and child bonding, and reduced hospital stays • One needs to have a positive attitude when they want to offer KMC services because of the challenges one can come across during KMC service delivery • Feeding of the underweight babies, keeping them warm and scaling up of infection prevention are key
	Busia	• Having the right knowledge and attitude is important for successful KMC implementation • KMC requires patience and a conducive environment for mother and infant
County policymakers	Bungoma	• KMC saves lives
	Busia	• KMC reduced neonatal deaths and changed mothers' attitudes of pre-term infants

		• Information, awareness and support can lead to positive changes in attitudes towards an intervention or health condition

Chlorhexidine gel for umbilical cord care

Key figures in the CHX programme implemented in Bungoma learned the importance of training and community engagement before implementing a new intervention, although programme implementers acknowledged that community engagement is a challenging, but necessary, process. Implementers who participated in IDIs realise the importance of working closely with county governments for intervention success. They also learned that implementation of the CHX programme does not require a lot of resources, which is consistent with findings from an earlier evaluation of the programme (Obare et al. 2016). A summary of key lessons from the intervention, by various actors, is provided in Table 8.

Interviewer: And what are the lessons…from the programme that can inform scale up?

Respondent: O.K., what I have learnt is that when you are introducing chlorhexidine, you really don't have to strain so much that you are looking for extra staff because you will continue using the same staff and if you have trained the community, the extension workers and the CHVs, then the community can still assist you to apply or to supervise the application of CHX. So it does not need a lot of resources, you can use what you have.

Interviewer: Any other lesson that we have learnt from the program that can inform scale up?

Respondent: What I have also learnt is that people only need information, and once you have empowered them they can continue.

County policymaker, CHX intervention, IDI, Bungoma

TABLE 8: LESSONS FROM CHLORHEXIDINE GEL PROGRAMME IN BUNGOMA

Actor	Lessons
CHVs	• CHV training and community engagement are key to successful implementation
Programme implementers	• Working closely with the county before implementing the programme, and involving the county in advocacy makes work easier • Taking the bottom-up approach during implementation is challenging
Health care providers	• Training and mentoring the health workers and the CHVs facilitates faster mobilisation and implementation, and refresher training should be continuous • Introduction of chlorhexidine does not need a lot of resources
County policymakers	• People need to be sensitised/empowered first before implementing a project to increase chances of acceptance

Maternal and neonatal death audits

Key figures from MPDSRs in all three sites learned about the importance of stakeholder engagement and community sensitisation for successful intervention implementation. Health care providers learned about the importance of teamwork and consultation for improved service delivery and health outcomes. Other actors learned about the importance of creating strong links between communities, health facilities, and policymakers, which helps to identify gaps, and strategies to address them. Key lessons from this intervention, in all programme sites, are summarised in Table 9.

You are supposed to be somebody who is able to listen and able to consult, because if you think you know everything, then you lose out on many other things, unlike if you just told me, 'I want Sister so and

so to leave [the facility] because she is losing our babies'. So, if somebody can listen and consult, you can work with anybody in any given environment.

Health care provider, MPDSR intervention, IDI, Bungoma

Relevance of Selected Programme Interventions

A common theme mentioned by key figures from programme interventions included in the case studies (CHX, KMC, *boda boda* ambulance system, death audits) is that their interventions contributed to improved health awareness, health-seeking behaviours, and health outcomes for mothers and newborns. In addition, availability of funds, human resources at facility and community levels, involvement of county policymakers, engagement of other key stakeholders, community sensitisation, availability of relevant supplies, and supportive follow ups were key to gaining acceptance and successful implementation of the interventions. Most of the challenges during implementation also cut across the interventions and programme sites and were mainly those that affect the demand for and supply of health services in the country, including distance to care, roads, bad weather, facility operating hours, insecurity at night, and limited financial and human resources. The extended industrial action by health care providers in 2017 also affected implementation in all sites. The *boda boda* and *tuktuk* ambulance systems, on the other hand, faced unique challenges associated with acquiring the necessary documentation to be contracted to provide the services. These findings indicate that despite challenges, simple health interventions can contribute to positive health outcomes for mothers and their newborns.

TABLE 9: LESSSONS FROM MATERNAL AND NEONATAL DEATH AUDITS

Actor	Programme site	Lessons
Programme implementers	Bungoma	• Facilities that involve communities are better positioned to manage audits • Facilities that receive support from the management have better outcomes • Sensitising the community during ANC and at the household level by CHVs on the importance of skilled delivery and where to access delivery services is important for reducing maternal and neonatal deaths
	Busia	• Human resources are critical for successful review of maternal and neonatal deaths • Maternal and neonatal death audits make people aware of how to them • Sensitising the community is important for changing attitudes towards health-seeking for improved health outcomes
	Wajir	• Maternal and neonatal death audits made people aware of the resources needed • The system contributed to improved community awareness on MNH issues
Health care providers	Bungoma	• There is need for teamwork—in facilities, communities, counties and sub-counties • Change should be taken positively; staff members should acknowledge mistakes and accept correction to prevent future occurrences • Listening and consulting is important: They enable one to work well in any environment
	Busia	• Teamwork among various actors is important for positive health outcomes • Client-centred services in facilities help prevent maternal and neonatal deaths • Consultation is important for identifying gaps in health service provision and how to address them
	Wajir	• The system contributed to a better understanding of where the problems lay and putting in place strategies for addressing them
County policymakers	Bungoma	• There are several factors that lead to death; it could be a short-term or long-term problem that caused it • Delays in communities and facilities contribute to maternal and neonatal deaths • There is need for commitment, proper leadership and involvement of all stakeholders for the success of the audit process
	Busia	• Partnership among various stakeholders is important for achieving positive health outcomes as no one partner can manage alone

		• Maternal and neonatal death audits played an important role in promoting peer learning for improved health outcomes • Financial and human resources are crucial for a successful audit process
	Wajir	• Ownership of an intervention by intended beneficiaries is important for ensuring its sustainability

Limitations, Recommendations, and Conclusion

Study Limitations

This evaluation's findings may be influenced by a few limitations. First, selection of women who had given birth in the previous 12 months, or were pregnant at the time of the household survey, could have resulted in biases, especially if the reference period was characterised by certain events with bearing on health service provision, such as work stoppage by health care providers, which has plagued the Kenyan health system in the past few years. This was evident from the decline in trends in service utilisation and some key programme indicators between 2016 and 2017, when there was an extended strike by public sector health workers. As a result, women's experiences at endline might not provide a true reflection of MNH service utilisation in 2017. In addition, analysis of quality of MNH services was limited to structural features of facilities, which might not give a complete picture of overall quality of care that is also a function of process (i.e. client-provider interactions) and outcomes of care (e.g. client satisfaction and improved health status). Furthermore, the small sample of facilities included in the assessment could not allow for tests to determine if differences over time were statistically significant. KSP was also implemented simultaneously with free maternity services, and due to the absence of a control site, delineating KSP's impact from free maternity services is not possible.

Recommendations for Sustainability and Scale Up

Despite limitations, the evaluation's findings suggest, for sustainability or scale up, that several actions, for all the interventions, are necessary within communities, programmes, the health system, and policies.

Community

- The finding that community sensitisation activities partly contributed to the success of specific programme interventions, such as CHX, KMC, and *boda boda* and *tuktuk* mbulance systems, suggests that community sensitisation is key for acceptance and continued use of services, including overcoming certain cultural barriers to service uptake (e.g. myths about pre-term infant care).

  Action: As KSP comes to an end, county governments should consider allocating resources to continue sensitisation activities, to ensure positive health behaviours and outcomes are sustained. This can, for instance, be achieved through County Health funds, which are provided for in the Public Finance Management Act, for ensuring all activities crucial for health service provision and uptake are provided for.

- Another challenge that emerged in communities is delayed household decision-making, which was encountered even with community-based referral mechanisms such as the *boda boda* and *tuktuk* ambulance systems, which suggests, for sustainability or scale up, that there is need for enhancing CHVs' capacities for counselling mothers during home visits, not only on the importance of seeking care, but doing so early.

  Action: A critical challenge has always been how to sustain CHVs' activities, which also applies to former traditional birth attendants (TBAs) re-oriented as birth companions as well as *boda boda* and *tuktuk* ambulance drivers. Supporting these groups' access of funds in their counties (e.g. Women Fund, Youth Fund, Constituency Development Fund) may provide additional resources. To avoid the potential pitfall of focusing on income-generating activities at the expense of core services, these groups can be encouraged to start

savings and credit cooperative organisations (locally known as Saccos) to manage their income-generating activities.

- Although there were significant improvements in knowledge and practice of specific MNH conditions and services, change was not uniform among all sub-groups of women for some outcomes. In particular, young (below 20 years), uneducated, unmarried, and poor women still face barriers to care.

  Action: Reaching young, unmarried women with MNH services requires attitude shifts both within communities and facilities, as young people's sexual and reproductive health has always been a sensitive issue in Kenya. Lessons from changes in attitudes for pre-term infant care, in the KMC intervention, could be applied for changing community and health care provider attitudes about MNH services for young people. Existing programmes such as the *Linda Mama* free maternity programme managed by NHIF can also contribute to reaching disadvantaged sub-groups, through appropriate targeting.

Programme and health system

- In-service training of health care workers and supportive supervision emerged as critical components for successful implementation, which underscores the need for CME and supportive supervision for facility-based health care providers' effective service delivery. Staff transfers, rotations, promotions, attrition, retirement, and even death emerged as key health system challenges to effective implementation of some interventions such as KMC and death audits.

  Action: Resources for CME and supportive supervision could be factored in the County Health Fund.

- Key figures in programme activities mentioned financial and human resources, supplies, and physical infrastructure as essential for their effective implementation, suggesting that ensuring constant and consistent availability of resources (financial, human, supply) is key to sustaining or scaling up interventions. Innovative strategies for resources to support sustainability or scale up are needed.

  Action: Existing resources such as *Linda Mama* free maternity, women, youth, and constituency development funds could help support health facility staffing and supplies.

- Evidence from implementing programme activities indicates that strong links between health facilities and communities are key to improving health service delivery, uptake, and outcomes, suggesting that the extent to which positive health behaviours and outcomes are sustained depends upon whether those links are maintained or strengthened.

  Action: Sustaining links between health facilities and communities requires financial resources, which can be leveraged from existing funds (such as *Linda Mama* free maternity, women, youth and constituency development funds), and supplementing those with strategies for utilising community resources (such as mobilising minimal contributions from community units already implemented in some areas).

Policy

- The finding that continuous engagement with key stakeholders was necessary for effective implementation suggests that advocacy and constant engagement with county policymakers, for increased allocation of resources, is key to ensuring sustainability or scale up, especially after the end of KSP. Even low cost interventions such as KMC require some resources for training providers and space at health facilities.

  Action: Technical working groups provide mechanisms for engaging key health sector stakeholders and opportunities for mobilising resources for health. County governments can engage various health sector stakeholders to support the technical working group meetings, during which strategies for replicating or sustaining interventions can be identified.

- Another challenge to community health service uptake, but which should be addressed in health policy, is physical access to care, both in health facility infrastructure as well as road conditions.

  Action: Improving physical access requires coordination among county and national governments, but it may also require both levels of government to engage potential donors, as local resources alone may not adequately fund infrastructural improvements.

Conclusion

This endline evaluation shows significant improvements for most key programme performance indicators, including knowledge of maternal conditions, knowledge of birth preparedness, four or more ANC visits, facility delivery, skilled delivery care, PNC within within 48 hours, initiation of breastfeeding within an hour of delivery, and health insurance. Although the programme did not meet its targets for some indicators, case studies of selected interventions such as the *boda boda* and *tuktuk* ambulances, use of CHX gel for umbilical cord care, KMC, and maternal and neonatal death audits show that these interventions contributed to improved health practices and outcomes for both mothers and their infants. Such contributions were possible through the involvement of county policymakers and other key stakeholders, and by enhancing community and facility health care providers' capacities, in addition to community sensitisation, requisite supplies, and supportive follow up. Sustaining or scaling up some of these interventions will require the leveraging existing resources and continuous engagement of key stakeholders.

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Appendices

Appendix 1: KSP Endline Evaluation Study Teams

TABLE A1: DATA COLLECTION TEAMS

ROLE	BUSIA TEAM	BUNGOMA TEAM	WAJIR TEAM
Team Leaders	David Ndara	Tom Saria	Nickson Machani
	Elias Masika	Daniel Aswa	Abdifatah Adow Hassan
Quantitative Teams	Flora Were	Mark Odhiambo	Fatuma Jimale Osman
	Diana Akinyi Olwala	Frederick Owino	Safia Ahmed Mohamed
	Laura Sela Tengo	Anne Matanda	Zamzam Mohamed Ali
	Owino Cornel Oduor	Rose Nafula Wanyonyi	Muhamed Ahmed Mohamed
	Kennedy Obure Oprong	Florence Agutu Oduor	Ahmed Mohamed Subane
	Barasa Xavier	Bancy Murugi Ireri	Aden Ahmed Mohamed
	Pauline Lutomia Khaemba	Isabel Olwaga	Issack Mohamed Adan
	Lucy Nanjala Wabende	Mary Asiko Nyambera	Mohamud Mohamed Abdi
	Rebecca Alung'at	Willah Simiyu	Abdinoor Omar Ali
	Anne Adhiambo Wadore	Edwin Maraga	Habiba Hussein Noor
		Namisi Okata Beldina	
		Sharon Mureka	
		Stanslaus Omondi	
		Nandwa Oneka Miriam	
		Stella Mutio Muli	
		Peris Wakhisi	
		Tracy Cheryl Katila	
		Amos Ollang	
		Maureen Atieno Yienya	
		Purity Machuka	
Clinical Teams	Halima Kimogol	Mercy Akhonya	Nickson Machani
	Adelaide Nekesa Okoth	Josephine Kithinji	Abdullahi Kassim Salat
	Moses Ndiwa	Winfred Owano	
	Esther Maina	Chemabus Kibet Joshua	
Qualitative Teams	Erick Waga	Rosemary Wangui	Habon Abdi Muktar
	Emma Owidi	Lydia Mauko	Fardowsa Rashid Unshur

Appendix 2: KSP Implementation Intensity

Intervention components and rationale for implementation	Details of activities	Intensity of implementation (frequency /quarter/year)	Period implemented	Perceived effects of intervention
Demand side				
Activation of CUs & training of CHVs and CHEWs to build capacity to support implementation of MNH at community level to address coverage	CHV/CHEWs/CHC Community entry- through normal administrative channels Create CUs Training of CHVs Training of CHVs on MNH technical module Supportive supervision to see how the CHVs counsel mothers Household supportive supervision visits done on a quarterly basis IGA component – saving with seed capital; then start activities Dialogue days -discuss with community issues of great using MOH 516 tool Community-based referral mechanism -danger signs-linkages with community transport CHV HH visit at community level Training on mHealth; WhatsApp groups for CHVs and health Workers Support CHV with NHIF - given to them for a year –to be role models Formation of CHS TWG	One-off training for CHC-leadership and governance for 7 days CHVs' basic module conducted for 10 days MNH for 5 days Supportive supervision conducted quarterly Training for 3 days Quarterly One off training in; Based on need Quarterly Continuous Monthly One off training for 2 days	Various time points August – 2014 Bungoma September – October 2015 - Busia September 2014 - Bungoma October – December 2015 - Busia January 2015 - Bungoma March – April 2016 June 2015 Bungoma July 2016 - Busia December 2014 Bungoma May 2016 Busia October 2015 July 2016 Busia January 215- Bungoma September 2016 Busia	Knowledge of CHC and CHVs roles Communication skills for delivery of key MNH messages at the HH level Knowledge gained on MNH interventions and messaging Increased utilisation of ANC, SBA and PNC, Motivated and validated CHV acceptance Economic activities, IGA and CHS intervention sustainability-*Boda boda* referral mechanism Community takes the initiative for their health; utilisation of ANC, SBA and PNC Reduced delay of movement to facilities for MNH services, SBA and pregnancy emergencies

		Once for 12 months Once and quarterly meetings	July 2015- Bungoma March 2016 Busia Formed in 2014 June - Bungoma 2016 April - Busia	Improved reporting rates and data quality from CUs Motivated CHVs on mHealth platform Motivated CHVs, role models for health insurance Synergistic implementation of interventions by partners
Participatory learning and action cycles to increase knowledge level for MNH to increase uptake of MNH services	Women groups are vehicles targeting WRA including adolescent girls, mothers-in-law CHV form women groups-monthly meetings – identify MNH problems and knowledge gaps, plan, act – PDSA CYCLE A cycle of six months – graduate on issue Groups of about 25 CHVs select women members from the HH level	Monthly and six-month cycle	July 2015 for Bungoma County and July 2016 for Busia County	Learning process interesting and additional values for knowledge brokerage Increases of uptake of MNH services
Male barazas to increase male involvement in MNH service uptake	Target- male Training of facilitators- CHVs/chiefs Conduct meetings on quarterly basis – use *barazas* for discussions, etc.	Quarterly basis	Bungoma – March 2015 Busia – July 2016 About 5500 men reached so far (some are repetitive)	The interventions are shaping morals of society- More men now involved in MNH service delivery. Increased agency model
Use of birth companions to improve uptake of skilled attendance	Targeting women who provided unskilled delivery services (TBAs and mothers-in-law) to start accompanying pregnant women for skilled attendance. Re-oriented women – 286 in Bungoma in Busia 87 Reaching high volume facilities- 4 days training on accompanying women to facilities- change agents – Use TBA cards- registers at facility - monthly meetings to document/ case studies	Monthly meetings	Bungoma- December 2014 Busia -October 2015	- There is need to provide more guidance on how the birth companions and CHVs work together to support pregnant mothers without any friction

Community theatre outreaches to create demand-edutainment	Magnate strategies- Approach using both education and comedy to raise awareness on programme activities and intervention in the public domain. There is need to improve on branding	Two outreaches per month for both Bungoma and Busia per sub-county	March 2015 for Bungoma and November 2015 for Busia	Increased public awareness of project activities and interventions
Radio programing to create demand, integrated with edutainment	One radio station was contracted to air the programme. There are, however, instances where different communities prefer programs aired through the local community radios next to them and this poses a challenge	Weekly/every Wednesday	July 2015 for Bungoma March 2016 for Busia	Increased public awareness of project activities and interventions
Supply side				
Capacity building of health care workers to address the knowledge and skill gap among care givers and improve quality of care	*Providers* EmONC MPDSR training Sub-county MPDSR team Clinical mentorship – maintaining skills during training Commodity management to improve stock monitoring KMC-champions training Support group meetings Infection prevention control Quality management- SBMR Training on CHX Distribution of commodity *Facility management teams* Leadership roles	EmONC training was one-off; 4 trainings were conducted MPDSR was one-off training for 5 days Clinical mentorship-mentors work in 4 teams, each team to visit specific health facilities 4 times Commodity management training KMC Training for health care workers; 4 trainings in Bungoma and 3 in Busia KMC champions training – one-off Infection prevention – one-off training conducted SBMR-conducted in 3 modules Training on CHX	Bungoma -2014-2015 Busia -2016 Bungoma -2015 Busia -2016 Bungoma -2015 Busia -2016 Bungoma-2015 Busia-2o16 Bungoma-2015 Busia-2016 Initial training in Bungoma -2015.refresher-2016.Busia-2015 Bungoma-2015 Bungoma-2016 Busia-2016 Bungoma-2016	Confidence of providers to manage certain emergencies-eclampsia Reduce unnecessary referrals Current use of bin cards but limited by supply side- ordering does not reach facilities Embraced KMC for pre-term babies Timely referrals of mothers - identification of cases Humane treatment of clients
	Community midwives Management of emergencies, equipment provided include delivery kits, infection prevention buckets,	Training conducted once for 20 midwives	Bungoma -2015	

	solar lamps, hand washing equipment, BP machines, Mackintosh.			
Infrastructural improvement to improve quality of care- poor status of facilities	*Facilities* Provide various equipment for MNH service delivery Including green energy for service use FMCs meet quarterly	Equipment provided include, delivery beds, delivery kits, MVA kits, IPC buckets, resuscitation equipment, screens, curtains, bedsheets		Night services for mothers to deliver there Community views are discussed Initially, conflict between two committees
	IEC materials for use at service points	IEC materials provided include warm chain, AMSTL, management of preeclampsia, administration of magnesium sulphate, feeding charts, cord care, hand washing, management of PPH, Kangaroo Mother care		
Policy and Advocacy				
Budget advocacy Ensure investment in MNH is prioritized	**Budget advocacy**- towards health is sufficient, inequities, utilisation; Capacity of CHC to influence budget process	Created a caucus to bring together like-minded NGOs in the health sector; established a network (HENNET in May 2015)		Allocation increased to 11m in 2015/16 for MNH 86% goes to recurrent expenditure - 120 ghost staff
Policy support	**Policy support**- County assembly and technocrats to ensure requisite polices towards health	Engaged MCAs, CEC members and Chief Officers in meetings to highlight MNH challenges (February, June 2015. February 2016		Itemized budget rather than departments
Household support	**HRH**- Support students to pursue nursing course - 32 in Bungoma, 24 students in Busia			

Appendix 3: KSP Adaptations

Intervention components	Key adaptions made to original design	Reasons for the adaptations	Effectiveness of adaptations made
Demand side			
Activation of community health units	Household supportive supervision for CHVs Mobilize communities and social leaders to select CHCs and CHVs instead of just asking MOH to identify and enrol them for training Supported CHVs initiative to work in groups of two or more where relationships involving in-laws inhibited communication of key of MNH messages during household counselling sessions Quality benchmarking of CU interventions Use of female CHVs as facilitators of women groups during mother-to-mother support group meetings	To ensure that skills gained from trainings are utilized to pass key messages at the household level to expectant and postpartum mothers To promote community ownership of interventions To overcome cultural barriers hindering passage of key MNH messages To improve the quality of the interventions Female CHVs have basic training on Community Based Maternal and Newborn Care issues Widen the number of women in the reproductive age who understand individual birth plan and danger signs	Increased utilisation of ANC, SBA and PNC services at the facilities Validated acceptance and work of the CHVs at the HH level Increased teamwork and motivation among CHVs to achieve results and increased utilisation of MNH services at the facilities Increase in quality of the interventions through repeated quality review meeting. Female CHVs are efficient in mobilization fellow women within the reproductive age on good MNH practice
mHealth	Utilisation of WhatsApp group as a platform of communication with community unit actors and health workers. use of ODK developed by programme team in Busia	Smart phones were issued to CHVs and CHEWs due to sustainability issue around use of commcare, especially the monthly subscriptions	Information can be transmitted to many people at once as necessary It is a cheaper model (no monthly subscriptions) with better chances of scaling and being taken-up by the County MOH
IGA-Village Savings and Loaning Associations (VSLA)	Allowed Community Health Extension Workers (CHEWs) to chair and be signatories where performance was dismal	To establish a sustainability mechanism for CU intervention	Motivated CUs Created a platform for CHVs and CHCs to discuss CU intervention in regular meetings

	Utilisation of the weekly VSLA meeting to discuss health-related issues affecting the villages and households	To retain the relevance of CHS	Both CHC members and CHVs are present in such meetings; therefore useful discussions take place
Community-based referral mechanism -danger signs- linkages with community transport	Linkage with the regular ambulance system	So, that emergencies that require further referrals to County hospitals and beyond are faster and more effective	Health workers have a chance to assess the patients early for timely management and if need be advice for further referrals
Birth Companions	Additional controls to improve on quality included tasking sub-county reproductive health coordinators to oversee the verification of monthly data submitted by birth companions Encouraged birth companions to participate in other community unit activities such as women groups, dialogue days and action days. Encouraged the Ministry of Health to be paying part of the incentive to birth companions using the free maternity refunds they get	To increase the validity and reliability of the birth companion data To integrate birth companions into tier 1 of health service delivery Cost sharing on the incentives was meant to promote sustainability once the programme comes to an end	The first two adaptations have worked well towards improving the quality of the intervention The one on paying of incentives has not worked well since the disbursement of the free maternity refunds to health facilities has been erratic.
Participatory Action Cycles – Women Groups	Adjusted the PLAC cycle from 21 months to 6 months. Procured membership cards for each of the PLAC participants.	Considering varied contextual factors, women in this community won't be able to attend a 21month cycle due to the attrition levels and the likelihood of losing interest along the way. The membership cards increased the commitment of the members to participate in PLAC meetings and activities	Reduction in the number of months in the cycle assisted the programme to retain the completion rate by members of the PLAC at a minimum of 75%s. The membership cards increased the commitment of the members to participate in PLAC meetings and activities
Community theatre outreaches	Conducted a scripting workshop in addition to the basic workshop during which the understanding of the contextual factors that need changing were refined together with the messages, which led to development of scripts for each thematic area	This was done to standardize the quality of the intervention across the programme sites but also increase the relevance of the messaging to context specific concerns/knowledge needs	This improved the quality of the intervention
Men-only *barazas*	Themes for men-only meetings were standardized in addition to encouraging feedback mechanisms between the intervention and the women group intervention	This was done to guard against allowing room for the discussions during the men-only *baraza* to get derailed into themes that cannot add value to MNH.	This has worked well so far
Boresha Afya Yako Radio Programme	Moved away from radio drama to a more enriched radio format which included comedy, session specialist and an interactive call-in session	Evidence indicates that enriched formats like the one adopted are more effective than radio drama	This is working so well so far; struggled with having a good listenership survey.

Supply side			
Clinical mentorship	Redesigned to focus on 11 health facilities	All mentees could not be reached in a cycle	Teams are reached frequently as per schedule
MPDSR	Formation of County MPDSR	Facilitate upward reporting	Joint actions between the county and the sub-county
Training of health care workers on KMC	Training of KMC champions	Promote peer education	Reduced stigma as mothers embrace KMC