



Curamericas Global

2021 KIKOP KNOWLEDGE, PRACTICE, AND COVERAGE SURVEY (KPC): A DIFFERENCE-IN-DIFFERENCE REPORT ON KEY MATERNAL AND CHILD HEALTH INDICATORS

Based on household interviews of mothers with children younger than 24 months in Kisii County, Kenya

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KIKOP works through community and government networks to catalyze, mobilize, and facilitate efforts to improve maternal-child health. The exemplary improvements noted by this report are due to the efforts of many partners – from mothers and Community Health Volunteers, to nurses at the health facilities, to regional government staff such as the Director of Health Services, Dr. Otomu, and to the Minister of Health for Kisii County, Madame Omache. Together, our efforts have led to significant improvements for the families in Kitutu Chache South, particularly mothers and young children. Everyone’s efforts have contributed to the success seen in this report. We look forward to continued prosperous and rich relationships that will enable us to advance maternal and child health outcomes for years to come.

Abbreviation and Acronyms Guide

- ANC: Antenatal Care
- CGV: Care Group Volunteer
- CHV: Community Health Volunteer
- CHEWS: Community Health Extension Workers
- CI: Confident Intervals
- COVID-19: Corona Virus Disease 2019
- Curamericas: Curamericas Global
- DiD: Difference-in-Differences
- ENA: Essential Newborn Actions
- FGM: Female Genital Mutilation
- KCDOH: Kisii County Department of Health
- KIKOP: Kisii Konya Oroiboro Project
- KTB: KoboToolBox
- MAD: Minimum Acceptable Diet
- MCHIP: Maternal and Child Health Integrated Program
- MMR: Maternal Mortality Ratio
- MNCH: Maternal, Newborn and Child Health
- MoH: Ministry of Health
- ODK: Open Data Kit
- RHV: Routine Home Visitation
- SGBV: Sexual Gender-based Violence
- TBA: Traditional Birth Attendants
- USAID: United States Agency for International Development
- U2: Under two years of age
- U5: Under 5 years of age
- WRA: Women of Reproductive Age (defined as 14-49 years of age)

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Executive Summary

Kenya is rapidly growing country that has faced significant challenges to sustainable growth, all of which have been worsened by the Corona Virus Disease 2019's (COVID-19) impact. Two-thirds of Kenyans live in poverty, earning less than \$3.20 a day. This wealth disparity leaves much of the population, especially women and young girls, chronically vulnerable, in large part due to food insecurity and medically preventable diseases and disorders.¹ This situation affects many aspects of maternal and child health, including the country's high maternal mortality rate—342 deaths per 100,00 live births (compared to 23.8 deaths per 100,000 live births in the United States).²

The Kisii Konya Oroiboro Project (KIKOP) was developed within the Kisii County community to improve maternal and child health outcomes. This project is a partnership between Curamericas Global and Kisii County Department of Health (KCDOH). KIKOP aims to strengthen maternal and child health through a variety of avenues, ranging from increasing access to quality, respectful, and culturally appropriate care to promoting attention to obstetric emergencies and improving essential newborn care. To improve these factors, a community-based intervention model called the Routine Home Visitation (RHV) model was used to deliver quality in-home health services and education.

This report is a detailed summary of the mixed-methods approach used to evaluate KIKOP's impact using the RHV intervention in the Nyagoto and Iranda catchments of Kisii County from 2018 to 2021. The purpose of this report is three-fold: (1) to present the findings via a difference-in-differences (DiD) analysis, (2) to document its strengths and weakness, and (3) to recommend necessary adaptations for future iterations of the implementation plan and program.

Olivia Peters, a Master of Public Health (MPH) student at the University of North Carolina, Chapel Hill, led this project from January to August of 2022 as an International Programs Intern. Curamericas Global Curamericas Global Program Manager, Barbara Muffoletto, supervised the project and the KIKOP team, Kevin Kayando and Anne Kerubo, helped guide the development of this report and handled data sources. Olivia was responsible for data cleaning and analyzation via Microsoft excel. She also produced all data visuals in this report and interpreted the results and findings from her analysis. The background research and context needed for this report was based on Curamericas Global internal documents and consulting KIKOP and Curamericas staff.



Background

The Kisii Konya Oroiboro Project (KIKOP) provides maternal-child health outreach, education, and support to people living in the Kitutu Chache South sub-county of Kisii County. Situated in the southwestern region of Kenya, Kisii County is the urban center of the region. The number of health personnel per capita is below the national average with 21 nurses, 3 doctors, and 10 clinical officers per 100,000 people in Kisii compared to 55 nurses, 10 doctors, and 21 clinical officers per 100,000 people nationally.³

Currently, the mortality of children under 5 (U5) in Kisii County is 74 deaths per 1,000 live births vs. 41.9 deaths per 1,000 nationally.^{4,5} Part of this alarming trend can be attributed to gaps in nutrition.³ In 2018, the Kenyan Ministry of Health (MoH) found that 8.4% of children under age five in Kisii County were underweight (WFA<-2 Z-scores) and 25.5% of children were stunted (HFA<-2 Z-scores). The MoH also reported in 2018 that only 69.3% of women delivered at the health facility, and only 62.8% of married or in-union women aged 15-49 used any modern method of family planning.^{3,5} These factors have contributed to a high Maternal Mortality Ratio (MMR) in Kisii County (500 deaths per 100,000 births), which is significantly higher than the Kenyan national average (342 deaths per 100,000 live births).^{2,5}

In 2017 Curamericas Global (Curamericas) and the KCDOH began the Kisii Konya Oroiboro Project to respond to the aforementioned challenges in two catchments in the sub-county of Kitutu Chache South. Project implementation began in 2018, with expansion into a third catchment in Kitutu Chache North in 2019. Overall, the project serves approximately 35,960 beneficiaries, which includes 8,925 women of reproductive age (WRA, defined as 14-49 years of age) and 1,430 children under two years of age (U2).

Project Overview: Activities and Goals

Kisii Konya Oroiboro Project (KIKOP) works to reduce the rates of infant, child, and maternal mortality through community-driven health education and health facility improvements that improve maternal knowledge of maternal-child health, infant and young child feeding practices, and maternal care-seeking behaviors.

Primary Intervention Strategies

KIKOP uses these primary intervention strategies:

Care Groups: Care Groups are a behavior-change methodology that utilizes mother-to-mother education, support, and accountability—creating changes that equitably reach every beneficiary household. These groups are led by mothers who volunteer their time and energy as Care Group Volunteers (CGVs). Each CGV leads 10-15 pregnant women and mothers of children U2 through regular, twice-monthly lessons where they learn and try new health behaviors (e.g., hand washing, breastfeeding, etc.). CGVs facilitate household behavior change through sharing of health information and conducting home visits to support households in implementing new behaviors. Altogether, Care Groups facilitate neighbor-to-neighbor peer education and support while fostering community-wide interest and desire to improve maternal and infant health.

Routine Home Visits: The routine home visitation (RHV) model is a community-based strategy that provides health education to individual households. Community Health Volunteers (CHVs), chosen by their communities, regularly visit the homes of pregnant women and mothers of children U2. Eleven visits are conducted between the second trimester of pregnancy and the child’s second birthday. During the visit, CHVs check on the health of the mother and child, ask them questions to assess their health knowledge and behavior and provide education and support in improving knowledge and behaviors at the household level. This model provides information on over two dozen health indicators so that project staff can, in turn, monitor their impact on the community and pivot to meet emerging needs. This model is a method for program staff to provide individualized health education, foster trusting relations between community members and KIKOP, and support healthy behaviors and education, all while bringing health services to those who may not visit a health clinic.

Health Facility Improvements: Health facility improvements include improvements to infrastructure and medical supplies at health facilities, facility accessibility, and provider attitudes and behaviors. KIKOP provides additional nurses to ensure 24/7 maternal care every day of the year and funds for essential non-pharmaceuticals and general improvements to ensure patient privacy. KIKOP facilitates exchange among providers, mothers, and traditional birth attendants (TBAs) to improve providers’ abilities in respectful, culturally appropriate care. KIKOP also advocates to the MoH for improvements in all areas mentioned above.

Community Mobilization: Village Health Committees were established at project onset. They educate community leaders on maternal-child health issues and share data with the community. They also assist project staff in encouraging healthy behaviors that may face resistance at the household level and establish community supports, such as community emergency transportation plans. Village Health Committees regularly come together for catchment-wide meetings as well as individually with project staff.

Project Goals

The goals of the project are to improve health outcomes for mothers and children U2, with the long-term goal of reducing maternal and child mortality. The table below provides detail on project baselines for various health outcomes as well as 3-year goals:

Table 1.

Indicator	Baseline (2018)		Goal (2021)
	Matongo	Iranda	Overall
Health facility delivery	65%*	71%*	85%
Attention to obstetric complications*	95%*	87%*	70%
Culturally appropriate, respectful care during labor and delivery	11%	16%	55%
Ability to name at least three pregnancy dangers signs	31%	25%	80%
Ability to name at least three dangers signs in labor/delivery	19%	8%	40%

Ability to name at least three maternal post-partum dangers signs	30%	14%	80%
Ability to name at least three newborn danger signs	33%	23%	80%
Families with birth plan that meets at least 3 conditions	16%	15%	80%
Stunting rate among children U2	15%**		8%
MMR per 100,000 live births	1,515	949	50% Reduction of 50% (757 and 475, respectively)
Neonatal mortality rate per 1,000 live births	68	38	35% Reduction (44 and 28, respectively)
Establishment of Community Birthing Centers***	0	0	3

*Baseline KPC data was collected using lists from community leaders and health facilities of mothers with young children in the community. It was discovered that these lists came primarily from families who had already been in contact with the health system, therefore some baseline data may suggest a higher-level of attainment than reality. Health facility deliveries, proper ANC, and attention to obstetric complications are indicators that may be more greatly affected than others. After the KPC, a census was completed. All mothers were asked about the location of their last delivery. These results are presented above under “Health Facility Delivery”.

**The baseline for stunting data is a combined baseline of Iranda, Matongo and Mosocho Market.

*** Curamericas defines Community Birthing Centers as a facility that provides adequate staffing, medical resources, and specific provider behaviors so that delivering mothers can have high-quality, culturally appropriate, and respectful care during delivery.

Study Purpose and Objectives

The Knowledge, Practice, and Coverage (KPC) survey uses standardized maternal-child health, WASH, and nutrition indicators to provide insight into current health practices and knowledge of mothers of young children within the project area. This KPC report examines changes in health knowledge, behaviors, and outcomes in two catchments that received three years of project intervention (Matongo, Iranda) and one control area (Mosocho Market), which did not receive any interventions or programming. To see the baseline report, refer to Appendix 4. This KCP report also assesses program progress and offers insight into project impact.

The specific objectives of the survey were to:

- Compare the current project and the control area with baseline data to assess program progress
- Provide insight on project impact through a difference-in-differences (DiD) analysis on selected indicators

Process and Partnership Building

The KPC Survey was designed in 2018 and implemented through a participatory process involving all of the stakeholders. The endline survey, conducted in 2021, was the same survey with minor adjustments to improve ease of use and understanding. An additional module on sexual, gender-based violence (SGBV) was added to the 2021 endline survey by KIKOP staff due to the need for increased attention to SGBV expressed by community members and interest from the MoH. The MoH was informed of the survey and schedule; however, they did not participate on the enumerator team due to funding limitations. Approval for the survey was sought and received from all key stakeholders throughout each part of the process. The endline KPC report will be shared with KCDOH, community, and

international partners, and will be used in a collaborative process to create a project plan spanning 2023-2026.

Methods

Study Design

There were two surveys deployed throughout the catchment areas, a baseline survey in 2018 (prior to project implementation), and an endline survey in 2021 (three years after project implementation). Both the baseline and endline surveys collected quantitative data through one-on-one structured interviews with mothers of children U2. The following catchments were sampled for each survey: Matongo, Iranda, and Mosoch Market. Matongo and Iranda were the intervention areas, while Mosoch Market was the control area, which was used to further assess intervention success over the three years.

Sampling

Both baseline and endline survey had a total sample of 300 participants. Participants were mothers of at least one child between the ages of 0 and 23 months. In instances where a mother/caregiver had more than one child (aged 0-23 months), the youngest child was selected. This selection served to minimize the mother's recall bias regarding health and nutrition services received during pregnancy, delivery, postpartum, and young child feeding. The youngest child is also often more vulnerable to childhood illnesses, and, therefore, best suited to provide better morbidity patterns than older children in the same household.

Baseline Sampling Strategy: Matongo, Iranda, and Mosoch Market

For the baseline survey, a sample of 300 mothers was obtained through stratified cluster sampling—30 clusters each containing 10 households—across the three catchments. Population data on all 55 villages was provided by the MoH, with a sampling interval determined by the total population divided by 30. Sampling was done in two stages. First, 30 communities were selected using systematic sampling of villages based on the sampling framework. Second, 10 mothers were pulled from lists provided by village leadership using simple random sampling.

Endline Survey Sampling Strategy: Iranda, Matongo

The endline sample of 100 mothers from Iranda and 100 from Matongo was obtained through simple random sampling from lists of mothers of children U2. The lists were created from a combination of data from yearly vital events censuses conducted in every community in Matongo and Iranda as well as RHV lists maintained by project staff and CHVs from 2018 to 2021. To get the sample of mothers, a list of mothers was made by catchment. Mothers were then selected using a random number generator, after being ordered from least to greatest. The final sample of mothers was chosen from those with the lowest numbers.

For both catchments, additional mothers had to be added to samples because many had moved away or temporarily stayed elsewhere during the COVID-19 pandemic. Iranda had an original sample of 114 mothers (including 14 extra mothers in case the original 100 were not able to be found or refused to participate). A second sample of 30 mothers had to be pulled to complete 100 participants in Iranda,

with participants found and interviewed based on their randomly assigned number. Matongo had an original sample of 117 (including 17 extra mothers). A second sample of 8 was pulled and interviews were done until the survey had 100 respondents.

Endline Survey Sampling Strategy: Mosocho Market

Mosocho Market served as a control area that did not receive project intervention between 2018 and 2021. As current lists of mothers of U2 were not available, KIKOP used a stratified cluster sampling followed by a “spin the bottle” method in selected villages. Villages, along with their population, were listed, assigned a random number, and subsequently sequenced. A sampling interval of 1,600 was used to select sample villages. Households in designated villages were randomly selected by spinning a bottle in the village center and then walking in that direction until 10 households with a mother of children U2 were interviewed. If the edge of a village was reached and 10 mothers were not found, then staff repeated the process at the center of the community.

Quality Assurance

Prior to data collection, the project staff and data collection team conducted multiple pre-tests to make corrections, check skip patterns and answer conditions (e.g., age limits), define terms, and practice translating the questionnaire into Kikisii. This process greatly minimized errors during data collection and allowed field staff to concentrate on interviewing and engaging with the respondents. Data was uploaded daily to an online server that could only be accessed by project staff who then performed data cleaning. Submitted questionnaires were cross-checked and verified daily through supervisors’ reports. Due to daily data cleaning and verification, the survey coordinator was able to promptly identify errors, allowing for missing data to be addressed before the team completed the catchment. Furthermore, daily debrief meetings enabled the supervisors and the survey coordinator to address field operational challenges. The supervision of the teams and clearly defined roles of each team member also contributed to improved quality of data.

Recruitment and Training

The in-country survey team were vetted and selected by the KIKOP project coordinator. In total, nine people directly collected or supervised the collection of data for the baseline KPC survey. This included five enumerators: two from the Ministry of Health (MoH) and two KIKOP staff. Fluency in both Kikisii and English was prioritized as qualifications for both baseline and endline team members to ensure full participant understanding and engagement.

The baseline survey data collection team went through five days of training and the endline team went through three days of training. The training duration was shorted for the endline team as many of the enumerators collected data during the baseline survey and were already familiar with the process and tool, allowing for more efficient training.

During both trainings, the team became familiar with the questionnaire, ODK (Open Data Kit) app, the consent process, data collection methods, anthropometry measurements, and indicator and answer definitions. During the training, interviewers practiced giving the interview individually and in pairs in Kikisii and discussed questions as a team. During training, staff reviewed the survey and indicators so

the team had a uniform understanding of every question and all answer options so they could be accurately explained in-field to the interviewees with consistency across all interviewers. Interviewers also took part in family planning demonstrations (including seeing the actual methods of contraception) and reviewing the Maternal, Newborn and Child Health (MNCH) booklet.

Questionnaire Development and Survey Instrument

The KPC questionnaire was created in 2018 using standard indicators provided by the United States Agency for International Development (USAID) Maternal and Child Health Integrated Program (MCHIP). The questionnaire contains 10 modules: mother's demographic data; mother's obstetric antecedents; pregnant women care; birth and newborn care; postpartum care and attention to newborn; maternal lactation, nutrition, and micronutrients; water and sanitation; vaccination; childhood illnesses; anthropometry.

An additional module on SGBV and female genital mutilation (FGM) was added to the endline survey to collect new data requested by the Kenya MoH. Given the breadth of the existing baseline and endline surveys and corresponding analyses, the results from the SGBV module are contained in a separate report. See full endline questionnaire in Appendix 2 . Moreover, minor adjustments were made to the questionnaire when it was used in a new catchment in 2019 in order to improve question flow and reduce required explanations from enumerators.

Before dissemination, baseline and endline KPC surveys were checked for accuracy and then field-tested. The survey was written in English and then translated into Kikisii, the local language of the region, during the interview. The KPC questionnaire was prepared in paper form, transferred to KoboToolBox (KTB) and then deployed on tablets through the ODK app. Some of the main advantages of using ODK was that it automatically followed question skip-logic and also allowed data gathering with or without internet connectivity on mobile devices or tablets.

Ethical Considerations

Study participants were briefed on the purpose of the study as well as the benefits and risks. Only after giving their consent via signature or thumb print did they participate in the interview. Enumerators were oriented on how to maintain the ethical aspect of the study, including the importance of confidentiality of respondents. The data given was organized, transported, analyzed, and stored in a manner ensuring confidentiality of the participants. No one outside of the program management and data analysis team had access to any of the information collected. Furthermore, the entire team was responsible for assuring that the data and submitted questionnaires were kept confidential. See Appendix 3 to view the consent form used.

Data Analysis

Baseline data was analyzed in Epi Info. Endline data was downloaded and analyzed in MS Excel. Prevalence levels were found for each indicator using Excel formulas with Fischer's 95% confidence interval (CI) values calculated through WinPepi. Analyses were spot-checked by program management.

A difference-in-difference (DiD) analysis was conducted to assess KIKOP intervention success. DiD is an analytical approach that facilitates causal inference by taking the before-after differences in a control group and intervention group. The result is an impact estimation—or the difference-in-differences.

	After	Before	Difference
Treatment/enrolled	<i>B</i>	<i>A</i>	<i>B – A</i>
Comparison/ nonenrolled	<i>D</i>	<i>C</i>	<i>D – C</i>
Difference	<i>B – D</i>	<i>A – C</i>	<i>DD = (B – A) – (D – C)</i>

	After	Before	Difference
Treatment enrolled	0.74	0.60	0.14
Comparison/ nonenrolled	0.81	0.78	0.03
Difference	-0.07	-0.18	<i>DD = 0.14 – 0.03 = 0.11</i>

Figure 1. Source: Impact Evaluation in Practice, 2011.⁶

With the inclusion of a control area, a DiD analysis provides a glimpse at the impact of the intervention, with the control as the counterfactual - what could have been if the intervention did not take place. A DiD analysis also provides the opportunity to see the protective effects programs can have in changing environments (such as the COVID-19 pandemic), where an indicator may get worse in the comparison area or where the difference between baseline and endline may not be significant.

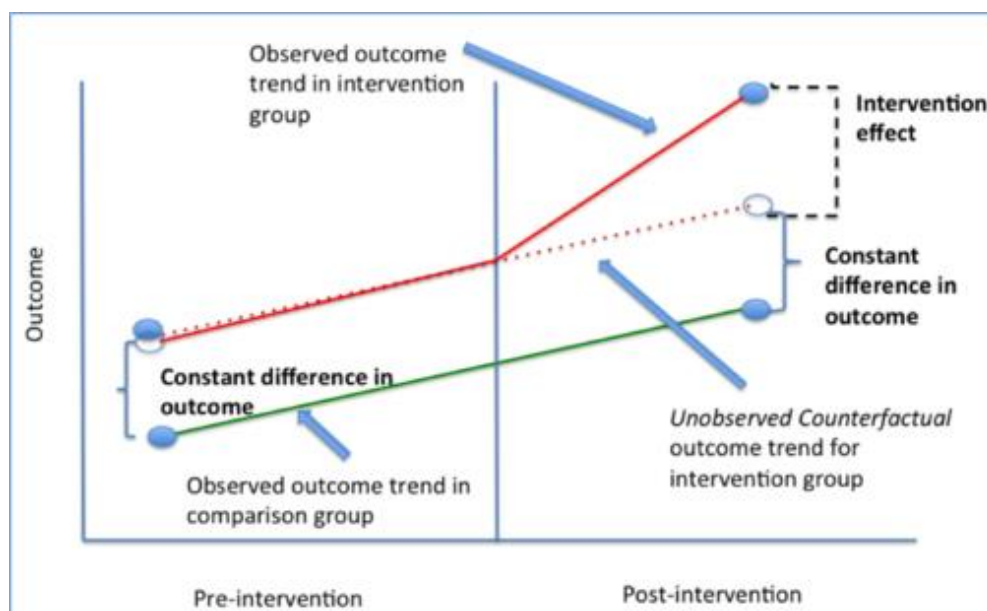


Figure 2. Source: Columbia University, 2019.⁷

Usually, in a DiD, after promising indicators are identified, a regression analysis is completed to account for any variations in participant demographics (e.g., mother’s education, household income, age at first pregnancy, etc.). For the purposes of this report, a comparison of beneficiary demographics is provided in the results section. Therefore, while not definitive, the DiD results provide insight into the potential impacts of the KIKOP program.

Results

Respondent Demographics

Table 2 below shows basic descriptive characteristics from respondents, broken down by catchment; whereas, Appendix 1 shows respondent characteristics without catchment differentiation. Overall, respondents shared very similar characteristics. Variation did exist in average household income with Iranda averaging the lowest at 3,825.62 KES and Matongo and Mosochi averaging 6,982.95 KES and 4,929.60 KES respectively.

Table 2.

Respondent Characteristics				
		Iranda	Matongo	Mosocho
Age (yrs)	Mean	26.52	26.14	27.09
	Median	26.5	25	26.5
	Range	23	30	29
Age at First Pregnancy	Mean	18.27	18.6	18.57
	Median	18.5	18	18
	Range	24	29	29
Pregnancy Status	Pregnant	0%	1%	2%
	Not pregnant	100%	98%	98%
	Unsure	0%	1%	0%
Lactation Status	Currently lactating	85%	81%	85%
	Not lactating	15%	19%	15%
Highest Level of Education	None	2%	0%	0%
	Some lower (grades 1-3)	1%	2%	0%
	Completed lower primary	2%	0%	1%
	Some upper primary (grades 4-	20%	18%	13%
	Completed upper primary	19%	20%	26%
	Some secondary	35%	19%	24%
	Completed Secondary	14%	32%	23%
	Some college/ university	2%	4%	8%
	Completed college/pre-universi	5%	4%	5%
	Post-graduate	0%	0%	0%
Most Comfortable language	English	0%	1%	2%
	Kiswahili	28%	48%	32%
	Kikisii	72%	51%	56%
	Luo	0%	0%	10%
	Luhya	0%	0%	0%
	Other	0%	0%	0%

Average Monthly Household Income (KES)	Mean	3825.62	6982.95	4929.60
	Median	3000.00	5000.00	2000.00
	Range	29500.00	49300.00	49500.00
Amount Spent on Medical Services in the past month (per household, KES)	Mean	420.55	901.03	1439.22
	Median	200.00	300.00	225.00
	Range	8900.00	12000.00	30000.00
Marital Status	Married	85%	79%	80%
	Married, not staying together	0%	2%	0%
	Separated	2%	2%	3%
	Divorced	0%	0%	0%
	Staying together, not married	0%	0%	0%
	Widowed	0%	0%	0%
	Single (never married)	13%	17%	17%
Current Occupation	Formal employment	0%	0%	4%
	Informal employment	0%	3%	5%
	Casual Labor	2%	3%	3%
	Own business	3%	22%	11%
	Farming	3%	2%	2%
	Dairy Farming	0%	0%	0%
	Dependent	0%	0%	0%
	Housewife	12%	11%	17%
Other	17%	4%	18%	

Religion	Christian	100%	100%	100%
	Muslim	0%	0%	0%
	Traditional	0%	0%	0%
	Hindu	0%	0%	0%
	Other	0%	0%	0%
Walking Distance to Health Facility (mins)	0-14 mins	22	9	9
	15-29 mins	35	50	36
	30-44 mins	33	33	40
	45-59 mins	7	4	3
	>1 hour	75	87	79
	Does not know	0	1	0
Material of Floor in Home	Eart/dirt/cowdung	80%	76%	56%
	Concrete/cement	17%	20%	34%
	tile/vinly/linoleum	3%	4%	10%
	Other	0%	0%	0%

Changes from Baseline to Endline: Matongo

Several indicators within Matongo were found to have changed positively after programmatic intervention. All of the indicators under the topic areas: prenatal care and planning; delivery, vitamin A; water, sanitation and hygiene; and IYCF saw improvement in performance (positive impact in percent) from baseline to endline.

Within the other areas, other indicators displayed significant change (defined by a difference greater than 50% from baseline to endline):

- Mothers who can name at least 3 danger signs during pregnancy
 - baseline: 31%, endline: 99%
- Mothers who can name at least 3 danger signs during delivery
 - baseline: 19%, endline: 89%
- Mothers who can name at least 3 danger signs during postpartum
 - baseline: 30%, endline: 100%
- Mothers who can name at least 3 newborn danger signs
 - baseline: 33%, endline: 100%

Table 3.

	Indicators	Baseline	95% Confidence Interval		Endline	95% Confidence Interval		N
			Lower Limit	Upper Limit		Lower Limit	Upper Limit	
Prenatal Care and Planning	Mothers who received 4+ ANC visits verified by MCH booklet	46%	34%	58%	80%	71%	87%	70
	Mother's whose male partner accompanied them to at least 1 ANC visit	36%	25%	48%	54%	44%	64%	70
	Mothers who had a birth plan with 3+ components	16%	8%	26%	78%	69%	86%	70
	Mothers who had a birth plan with all 5 components	1%	0%	8%	43%	33%	53%	70
	Mothers who had birth plan (any number of components)	56%	43%	68%	98%	93%	100%	70
	Mother's whose birth plan contained delivery location	29%	18%	41%	79%	70%	87%	70
	Mothers whose birth plan contained transportation	26%	16%	38%	75%	65%	83%	70
	Mothers whose birth plan contained funds for delivery	30%	20%	42%	95%	89%	98%	70
	Mothers whose birth plan contained a person to accompany them to facility for delivery	7%	2%	16%	72%	62%	81%	70
Delivery	Mothers whose birth plan contained a person to watch their children/home	4%	1%	12%	51%	41%	61%	70
	Mothers who had a health facility delivery	64%	*	*	100%	*	*	70
Obstetric Complication	Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	11%	5%	21%	35%	26%	45%	70
	Mothers who reported that they received care for their obstetric complications	95%	77%	100%	78%	64%	88%	22
Mother's Knowledge: Danger Signs	Mothers who had a complication during pregnancy and received care	100%	82%	100%	90%	68%	99%	19
	Mothers who can name at least 3 danger signs during pregnancy	31%	21%	44%	99%	95%	100%	70
	Mothers who can name at least 3 danger signs during delivery	19%	10%	30%	89%	81%	94%	70
	Mothers who can name at least 3 danger signs during postpartum	30%	20%	42%	100%	96%	100%	70
	Mothers who can name at least 3 newborn danger signs	33%	22%	45%	100%	96%	100%	70

ENA	Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	87%	76%	94%	43%	33%	53%	67
Vitamin A	Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	43%	29%	58%	82%	63%	94%	49
Water, Sanitation & Hygiene	Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	80%	69%	89%	95%	89%	98%	70
	Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	57%	45%	69%	75%	65%	83%	70
	Mothers who state that she safely disposed of their child's feces the last time s/he passed stool	94%	86%	98%	98%	93%	100%	70
	Mothers who state that they regularly apply safe water treatment to drinking water	13%	6%	23%	52%	42%	62%	70
	Percentage of mothers who have an Open Defecation Free (ODF) Household	4%	1%	12%	57%	47%	67%	70
Family Planning	Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	87%	77%	94%	80%	71%	88%	70
IYCF	Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	4%	1%	15%	75%	55%	80%	46
	Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	14%	4%	32%	48%	26%	70%	29
	Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	100%	80%	100%	100%	82%	100%	17
	Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	73%	50%	89%	79%	60%	92%	22

*Indicator was done as a census. Since a few households may have been missed, assuming no CI

Changes from Baseline to Endline: Iranda

Several indicators in Iranda were found to have changed positively after programmatic intervention. All of the indicators under the topic areas: obstetric complication; mothers knowledge: danger signs; vitamin A; water, sanitation and hygiene; family planning; IYCF saw improvement in performance (positive impact in percent) from baseline to endline.

Within the other topics, other indicators displayed significant change (defined by a difference greater than 50%) from baseline to endline:

- Mothers who had a birth plan with 3+ components
 - baseline: 15%, endline: 71%
- Mothers who had a complication during pregnancy and received care
 - baseline: 30%, endline: 89%
- Mothers who had a complication during delivery and received care
 - baseline: 0%, endline: 100%
- Mothers who had a complication during postpartum and received care
 - baseline: 10%, endline: 86%
- Mothers whose child presented with pneumonia symptoms in the last two weeks who were taking to a health care provider within 48 hours
 - baseline: 21%, endline: 100%

- Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months
 - baseline: 24%, endline: 93%

Table 4.

	Indicators	Baseline	95% Confidence Interval		Endline	95% Confidence Interval		N
			Lower Limit	Upper Limit		Lower Limit	Upper Limit	
Prenatal Care and Planning	Mothers who received 4+ ANC visits verified by MCH booklet	93%	86%	95%	71%	61%	80%	110
	Mothers whose male partner accompanied them to at least 1 ANC visit	39%	29%	49%	53%	43%	63%	110
	Mothers who had a birth plan with 3+ components	15%	9%	23%	71%	61%	80%	110
	Mothers who had a birth plan with all 5 components	1%	0%	5%	26%	18%	36%	110
	Mothers who had birth plan (any number of components)	62%	53%	71%	91%	84%	96%	110
	Mothers whose birth plan contained delivery location	36%	27%	46%	75%	65%	83%	110
	Mothers whose birth plan contained transportation	29%	21%	39%	69%	59%	78%	110
	Mothers whose birth plan contained funds for delivery	31%	22%	40%	75%	65%	83%	110
	Mothers whose birth plan contained a person to accompany them to facility for delivery	11%	6%	18%	60%	50%	70%	110
	Mothers whose birth plan contained a person to watch their children/home	9%	4%	16%	42%	32%	52%	110
Delivery	Mothers who had a health facility delivery	71%	*	*	99%	*	*	110
	Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	16%	10%	25%	10%	5%	18%	110
Obstetric Complication	Mothers who reported that they received care for their obstetric complications	87%	72%	96%	100%	73%	100%	38
Mother's Knowledge: Danger Signs	Mothers who can name at least 3 danger signs during pregnancy	25%	17%	34%	93%	86%	97%	110
	Mothers who can name at least 3 danger signs during delivery	8%	4%	15%	81%	72%	88%	110
	Mothers who can name at least 3 danger signs during postpartum	14%	8%	22%	91%	84%	96%	110
	Mothers who can name at least 3 newborn danger signs	23%	15%	32%	97%	91%	99%	110

ENA	Mothers who reported that their newborn received all 7 essential newborn actions (ENAs)	4%	1%	9%	10%	5%	18%	109
	Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	95%	89%	98%	29%	20%	39%	102
Vitamin A	Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	65%	52%	77%	69%	49%	85%	63
	Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	51%	35%	67%	76%	55%	91%	43
	Mothers with MNCH booklet that shows that their 18-23 month old child received Vitamin A dose 3	52%	31%	73%	67%	46%	83%	23
Water, Sanitation & Hygiene	Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	82%	73%	89%	96%	90%	99%	110
	Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	54%	44%	63%	77%	68%	85%	110
	Mothers who state that they regularly apply safe water treatment to drinking water	13%	7%	20%	45%	35%	55%	110
	Percentage of mothers who have an Open Defecation Free (ODF) Household	11%	6%	18%	46%	36%	56%	110
Family Planning	Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	76%	61%	79%	83%	74%	90%	107
IYCF Practices	Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	38%	91%	100%	100%	81%	100%	38
	Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity (MDD)	24%	45%	84%	93%	77%	99%	24
	Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency (MMF)	55%	5%	24%	65%	41%	64%	55
	Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	55%	1%	15%	98%	92%	100%	55
	Mothers who had a complication during pregnancy and received care	30%	88%	100%	89%	67%	99%	30
	Mothers who had a complication during delivery and received care	0%	72%	100%	100%	28%	83%	11
	Mothers who had a complication during postpartum and received care	10%	44%	98%	86%	42%	100%	10
	Mothers with MNCH booklet that shows that their 18-23 month old child received Vitamin A dose 3	23%	31%	73%	67%	46%	83%	23
	Mothers whose child presented with pneumonia symptoms in the last two weeks who were taken to a health care provider within 48 hours	21%	34%	78%	100%	48%	100%	21
	Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	24%	45%	84%	93%	77%	99%	24

*Indicator was done as a census. Since a few households may have been missed, assuming no CI

Changes baseline to endline: Mosocho Market

In Mosocho Market, the control catchment, only one of the indicators significantly changed from baseline (2018) to endline (2021). Significance in this catchment was also defined by a difference greater than 50% from baseline to endline.

Indicator that displayed significant change (defined by a difference greater than 50%) from baseline to endline:

- Mothers who report that their child had diarrhea in the last two weeks and that that they provided ORS packets/salts

Table 5.

Indicators	MM Baseline	MM Endline	N
Mothers who had a birth plan with 3+ components	17%	26%	121
Mother's whose birth plan contained delivery location	39%	34%	121
Mothers whose birth plan contained transportation	29%	20%	121
Mothers whose birth plan contained funds for delivery	40%	42%	121
Mothers whose birth plan contained a person to accompany them to facility for delivery	8%	21%	121
Mothers whose birth plan contained a person to watch their children/home	2%	9%	121
Mothers who had a complication during pregnancy and received care	100%	85%	27
Mothers who can name at least 3 danger signs during delivery	11%	20%	121
Mothers who can name at least 3 danger signs during postpartum	14%	39%	121
Mothers who can name at least 3 newborn danger signs	36%	67%	121
Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	87%	27%	109
Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	71%	68%	79
Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	35%	67%	37
Mothers who report that their child had diarrhea in the last two weeks and that that they provided ORS packets/salts	0%	54%	41

Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	71%	76%	118
Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	57%	43%	30
Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity	4%	30%	71
Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency	1%	87%	71
Mothers of breastfed children 6-23 months who provided a minimal acceptable diet	9%	31%	66

Difference-in-difference: Indicator Results by Catchment

Table 6 below shows every indicator and the difference by catchment from the baseline to endline time periods, as well as the difference between each catchment and the change in the control area (Mosocho Market). Columns “Change 2018-2021” show the difference between endline and baseline data, with baseline data subtracted from endline by catchment. If an indicator increased, this number will be positive. If the indicator decreased, it will be negative. For example, there was a 34% increase in the percentage of mothers with 4 or more antenatal care visits (ANC) in Matongo between 2018 and 2021.

The changes seen in the comparison table represent the intervention catchments when subtracted from the control catchment, Mosocho Market (see columns “Pre-Post Test”). A positive number in the “pre-post test” column meant the intervention was successful in improving the indicator from 2018 (baseline, or pre-KIKOP intervention) to 2021 (endline, or post-KIKOP intervention). A negative number represents a decrease in improvement, or that the control still saw improvement, without KIKOP intervention. The distance from 0 (0-100%) in the two “difference” columns indicates the difference between the intervention and comparison area. The larger the difference, the greater the estimated impact of the project.

Table 6.

Difference-in-Difference Comparison Table						
Indicators		Matongo	Iranda	Mosocho Market (control)	Matongo Difference (control - intervention)	Iranda Difference (control - intervention)
		Change 2018 to 2021	Change 2018 to 2021	Change 2018 to 2021		
Prenatal Care and Planning	Mothers who received 4+ ANC visits verified by MCH booklet	34%	-22%	-45%	79%	23%
	Mother's whose male partner accompanied them to at least 1 ANC visit	18%	14%	-4%	22%	18%
	Mothers who had a birth plan with 3+ components	62%	56%	9%	54%	48%
	Mothers who had a birth plan with all 5 components	42%	25%	1%	40%	24%
	Mothers who had birth plan (any number of components)	42%	29%	-14%	56%	43%
	Mother's whose birth plan contained delivery location	50%	39%	-5%	55%	43%
	Mothers whose birth plan contained transportation	49%	40%	-9%	58%	49%
	Mothers whose birth plan contained funds for delivery	65%	44%	2%	63%	43%
	Mothers whose birth plan contained a person to accompany them to facility for delivery	65%	49%	13%	52%	36%
Delivery	Mothers whose birth plan contained a person to watch their children/home	47%	33%	7%	40%	26%
	Mothers who had a health facility delivery	6%	5%	-11%	17%	16%
Obstetric Complications	Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	24%	-6%	-23%	47%	17%
	Mothers who reported that they received care for their obstetric complications	-17%	13%	-3%	-15%	16%
	Mothers who had a complication during pregnancy and received care	-10%	-11%	-15%	5%	4%
	Mothers who had a complication during delivery and received care	-7%	0%	0%	-7%	0%
Mother's Knowledge: Danger Signs	Mothers who had a complication during postpartum and received care	23%	6%	31%	-8%	-25%
	Mothers who can name at least 3 danger signs during pregnancy	68%	68%	14%	53%	54%
	Mothers who can name at least 3 danger signs during delivery	70%	73%	9%	61%	64%
	Mothers who can name at least 3 danger signs during postpartum	70%	77%	25%	45%	52%
	Mothers who can name at least 3 newborn danger signs	67%	74%	31%	37%	44%

ENA	Mothers who reported that their newborn received all 7 essential newborn actions (ENAs)	15%	6%	-3%	18%	9%
	Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	-44%	-67%	-60%	16%	-6%
Water, Sanitation & Hygiene	Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	15%	14%	-44%	59%	58%
	Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	18%	23%	11%	7%	13%
	Mothers who state that she safely disposed of their child's feces the last time s/he passed stool	4%	5%	-10%	13%	14%
	Mothers who state that they regularly apply safe water treatment to drinking water	39%	32%	8%	31%	25%
	Percentage of mothers who have an Open Defecation Free (ODF) Household	53%	35%	3%	50%	32%
Child Illness & Care Seeking	Mothers who report that their child had diarrhea in the last two weeks and that that they provided ORS packets/salts	68%	30%	54%	14%	-24%
	Mothers who report that their child had diarrhea in the last two weeks and they increased feeding and fluids	-50%	-33%	0%	-50%	-33%
	Mothers who report that their child was diagnosed with malaria in the last 2 weeks and received ACT treatment	0%	50%	-32%	32%	82%
	Mothers whose child presented with pneumonia symptoms in the last two weeks who were taking to a health care provider within 48 hours	20%	43%	46%	-26%	-3%
Family Planning	Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	-7%	12%	5%	-12%	7%
IYCF Practices	Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	0%	0%	0%	0%	0%
	Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	7%	26%	-14%	20%	40%
	Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity (MDD)	75%	62%	34%	41%	27%
	Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency (MMF)	98%	93%	85%	13%	8%
	Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	71%	56%	29%	42%	27%

Nutrition Indicators

Adequate nutrition is vitally important for children U5 as this period is formative in their development. Well-nourished children have stronger immune systems and experience better overall health^{8(p5)} KIKOP sought to improve children U5's nutritional status from 2018 to 2021. All baseline and endline nutritional outcomes are listed in table 7 below:

Table 7.

Nutrition Indicators						
	Iranda		Matongo		Mosocho	
	baseline	endline	baseline	endline	baseline	endline
Moderate or severe Underweight	4%	5%	4%	5%	5%	7%
Moderate or severe Stunting	17%	20%	7%	20%	16%	19%
Moderate or severe Wasting	2%	6%	3%	6%	2%	5%
Moderate Underweight (W/A)	4%	4%	3%	3%	1%	4%
Severe Underweight (W/A)	0%	1%	1%	1%	4%	3%
Moderate Stunting (H/A)	13%	13%	7%	17%	12%	10%
Severe Stunting (H/A)	4%	7%	0%	4%	4%	9%
Moderate Wasting (W/H)	0%	4%	0%	1%	0%	4%
Severe Wasting (W/H)	2%	2%	3%	1%	2%	1%

*W (wrist), H (height), A (arm) all represent anthropometric measurements that were used to assess different nutritional indicators

Overall, all catchments underwent less than or equal to a 5% change from 2018 to 2021. The only two exceptions were in the one of the KIKOP intervention catchments, Matongo. Moderate or severe stunting improved 13% (baseline: 7% to endline: 20%) while stunting (H/A) improved 10% (baseline: 7% to endline: 17%).

Difference in Difference Analysis: Highlighted Indicators

These indicators were selected as large improvements in one or both catchment areas, compared to the change seen in the comparison area. Refer to Appendix 5 to view all the indicators from the KPC survey. The DiD analysis suggests that the areas listed below are where KIKOP had the greatest impact:

- ≥ 4 Prenatal Visits Verified by Maternal Health Booklet
- Birth plan Containing 3+ Components
- Health Facility Delivery
- Respectful, Culturally Appropriate Care during Delivery
- Maternal Knowledge
 - Pregnancy Danger Signs
 - Delivery Danger Signs
 - Postpartum Danger Signs *
 - Newborn Danger Signs
- Handwashing Hygiene
- Drinking Water Point-of-Use Treatment
- Defecation Hygiene
- Exclusive Breastfeeding for 6 Months
- Minimum Dietary Diversity (MDD)
- Minimum Acceptable Dietary Standards (MAD)
- Family Planning

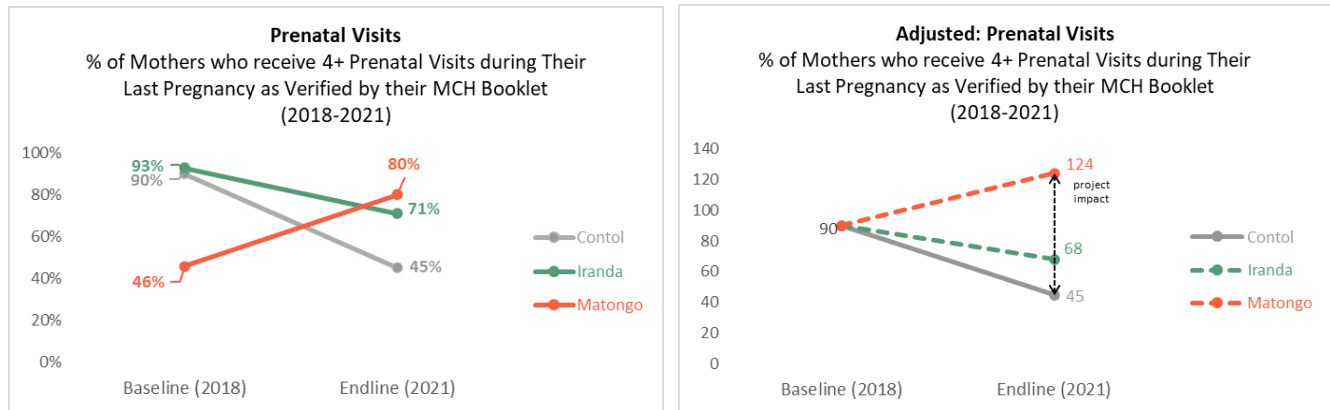
Indicators were included in this section based off the following criteria:

- They had an N greater than or equal to 30

- There was a minimum 30 percentage points between the control group and either catchment
- Note: Intervention significance was defined by greater than a 30 percent increase from baseline to endline in each catchment

≥ 4 Prenatal Visits Verified by Maternal Health Booklet

The proportion of interviewed women who had at least four antenatal care checks from a health professional prior to their most recent delivery per their Maternal Health Card from 2018 to 2021.

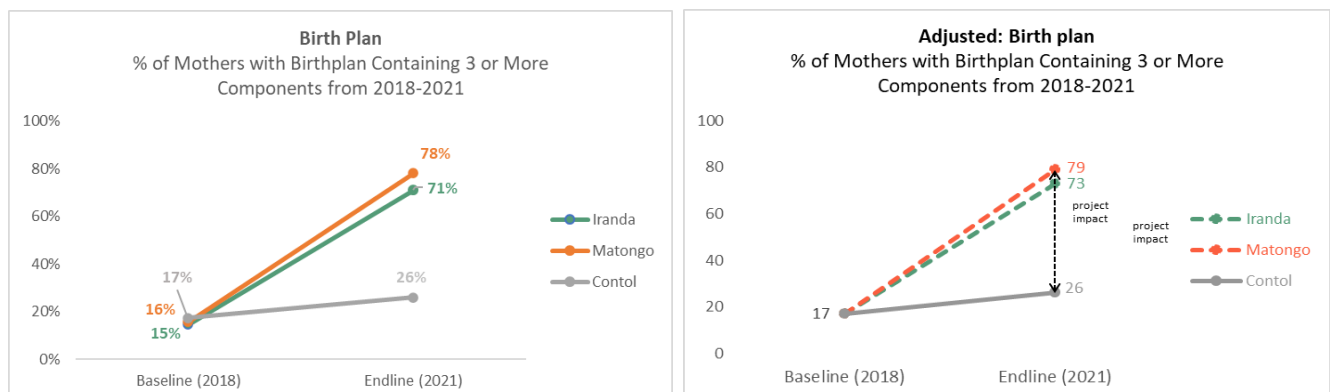


Figures 3 & 4. Baseline: Matongo: 46% [N=70], Iranda: 93% [N=110], Control: 90% [N=121]. Endline: Matongo: 80% [N=100], Iranda: 71% [N=100], Control: 45% [N=100]

From baseline to endline, there was a 45% reduction in prenatal visits for mothers in the control area (baseline: 90%; endline: 45%) as well as a 22% reduction in Iranda (baseline: 93%; endline: 71%). However, Matongo saw an increase in prenatal visits (baseline: 46%; endline: 80%) by 34%, suggesting that the intervention positively impacted visit frequency in that aforementioned catchment. The DiD analysis suggests that the intervention had a protective effect in both catchments, but only meet the significance threshold of greater than a 30% increase in Matongo.

Birth plan Containing 3+ Components

The proportion of interviewed women who stated their family had a birth/transport plan in place during their most recent pregnancy that met at minimum 3 of the following conditions: 1) identified the health facility where the woman plans to deliver; 2) identified means of transportation to the health facility and the cost of that transportation; 3) identified how the family will secure the transportation money; 4) identified who will accompany the woman to the health facility; and 5) identified who will care for the woman's child(ren) and home during her absence and who will help her post-partum.

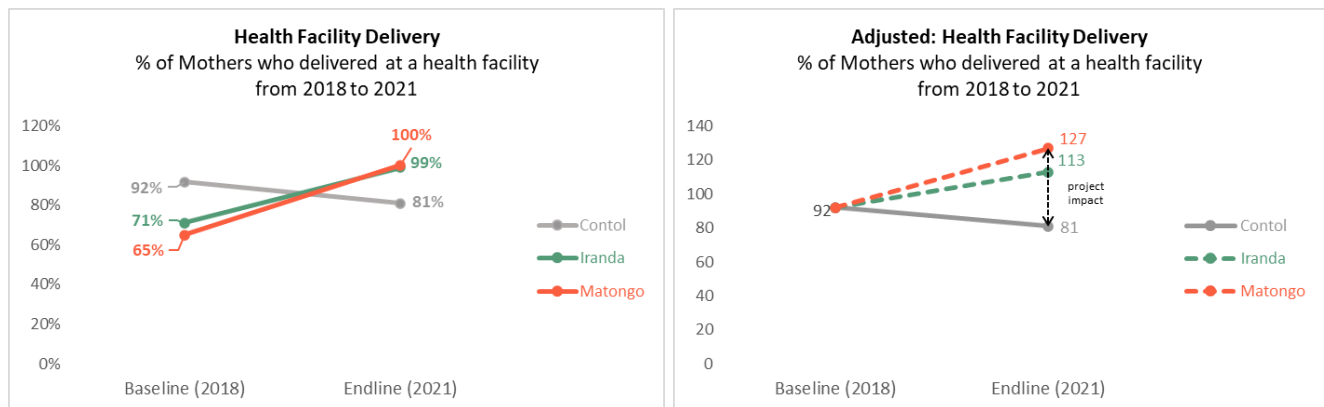


Figures 5 & 6. Baseline: Matongo: 16% [N=70], Iranda: 15% [N=110], Control: 17% [N=121]. Endline: Matongo: 78% [N=100], Iranda: 71% [N=100], Control: 26% [N=100]

From baseline to endline, there was an increase in the percentage of post-partum mothers who created a birth plan during their pregnancy that included three or more components in all project and comparison areas. The difference between baseline and endline for the control was minimal, with a 9% difference (baseline: 17%; endline: 26%); while birth plans in Iranda (baseline: 15%; endline: 71%) and Matongo (baseline: 16%; endline: 78%) increased significantly (more than 30%; 56% increase in Iranda; 62% increase Matongo) between the two time periods. This suggests the KIKOP intervention had a significant impact on if mothers created a birth plan with at least three components during pregnancy.

Health Facility Delivery

Percentage of women interviewed who report that their most recent delivery occurred in a health facility (clinic or hospital – level 2, 3, 4 or 5) attended by a health professional (doctor, nurse, nurse-midwife, professional midwife, auxiliary nurse). *Note this data was taken from the census.



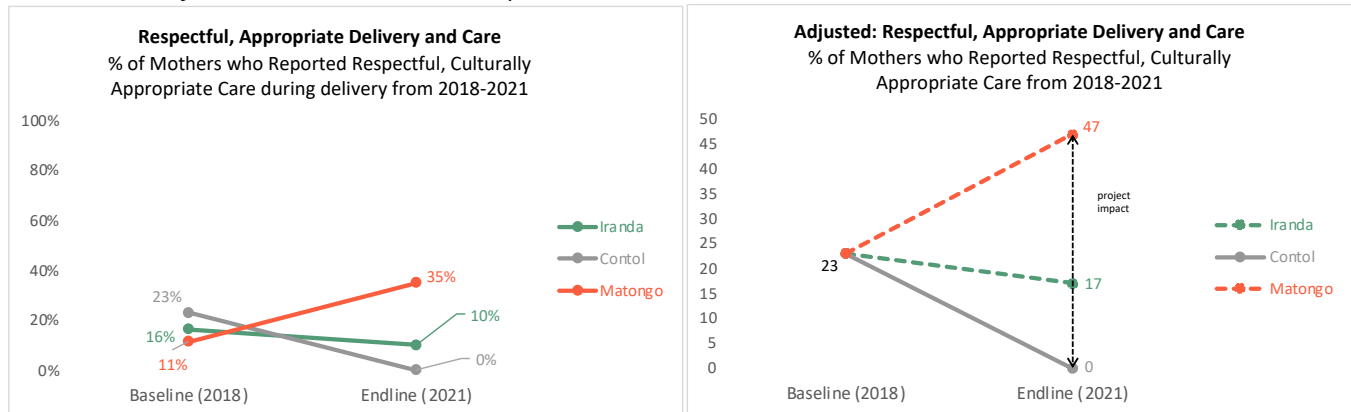
Figures 7 & 8. Baseline: Matongo: 65% [N=70], Iranda: 71% [N=70], Control: 92% [N=121]. Endline: Matongo: 100% [N=100], Iranda: 99% [N=100], Control: 81% [N=100]

There was an increase in the percentage of health facility deliveries in both intervention catchments, from baseline to endline, with a decrease in the control (baseline: 92%; endline: 81%), over the same time period. Matongo saw significant (45%) increase in health facility deliveries (baseline: 65%; endline: 100%) while Iranda increased by 28%, almost meeting the 30% threshold for significance (baseline: 71%; endline: 99%). Overall, these results suggest the KIKOP intervention had a positive impact on health facility births.

The baseline indicator related to health facility delivery came from census data in Iranda and Matongo, and the baseline KPC in Mosochi Market. Both Matongo and Iranda saw a significant increase to 100% and 99% respectively. In Mosochi Market, the control catchment, an 11% decrease was seen from 2018 to 2021.

Respectful, Culturally Appropriate Care during Delivery

The proportion of interviewed women who reported their most recent delivery occurred in a health facility where their delivery met all the following conditions: 1) received respectful courteous service; 2) presence of family permitted; 3) chose her position of delivery and her birth attendant; 4) given sufficient privacy; 5) the woman/family were allowed to consume traditional teas/foods and conduct traditional practices.

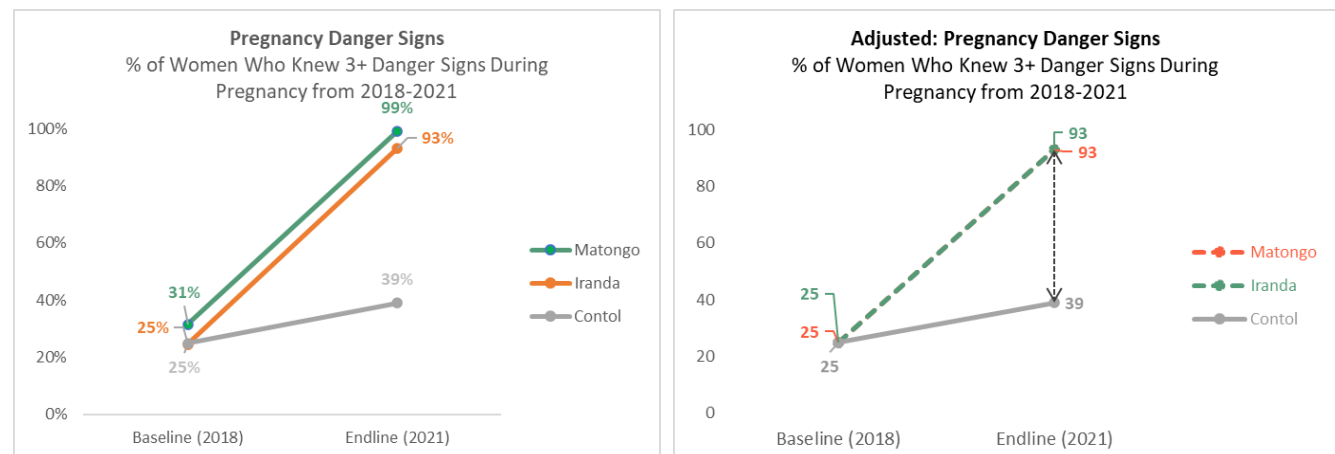


Figures 9 & 10. Baseline: Matongo: 11% [N=70], Iranda: 16% [N=110], Control: 23% [N=121]. Endline: Matongo: 35% [N=100], Iranda: 10% [N=99], Control: 0% [N=81]

There was a reduction from baseline to endline in respectful, appropriate care for mothers in the control area (baseline: 23%; endline: 0%) as well as in Iranda (baseline: 16%; endline: 10%). Matongo (baseline: 11%; endline: 35%) saw an increase in prenatal visits, which suggest the intervention positively impacted the indicator. None of the catchments met the significance threshold of 30% improvement. In fact, Iranda even saw an decrease 2018 to 2021, suggesting further inquiry and future intervention modification needed.

Maternal Knowledge: Pregnancy Danger Signs

The proportion of women who, when interviewed, could name at least 3+ danger signs in pregnancy that require immediate attention from a health professional.



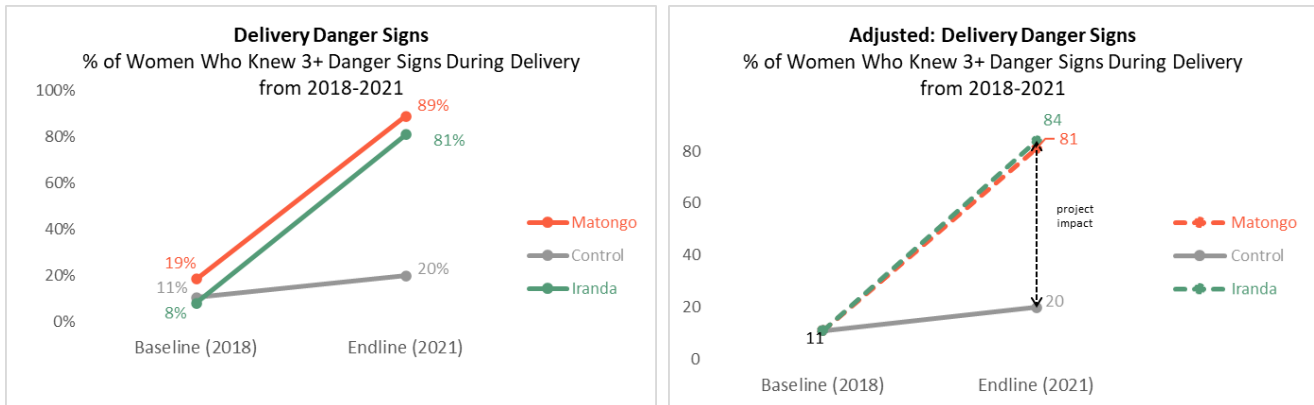
Figures 11 & 12. Baseline: Matongo: 31% [N=70], Iranda: 25% [N=110], Control: 25% [N=121]. Endline: Matongo: 99% [N=100], Iranda: 93% [N=100], Control: 39% [N=100]

Both Matongo (baseline: 31%; endline: 99%--68% increase) and Iranda (baseline: 25%; endline: 93%--68% increase) saw a significant increase in women who could identify 3+ pregnancy danger signs

between the two time periods, while the control (baseline: 25%; endline: 39%) did not improve at such a rapid rate. Overall, there was a 54 percentage point difference when comparing the intervention and comparison areas, suggesting a positive and significant intervention impact.

Maternal Knowledge: Delivery Danger Signs

The proportion of interviewed women who could name at least 3 danger signs in delivery that require immediate attention from medical provider.

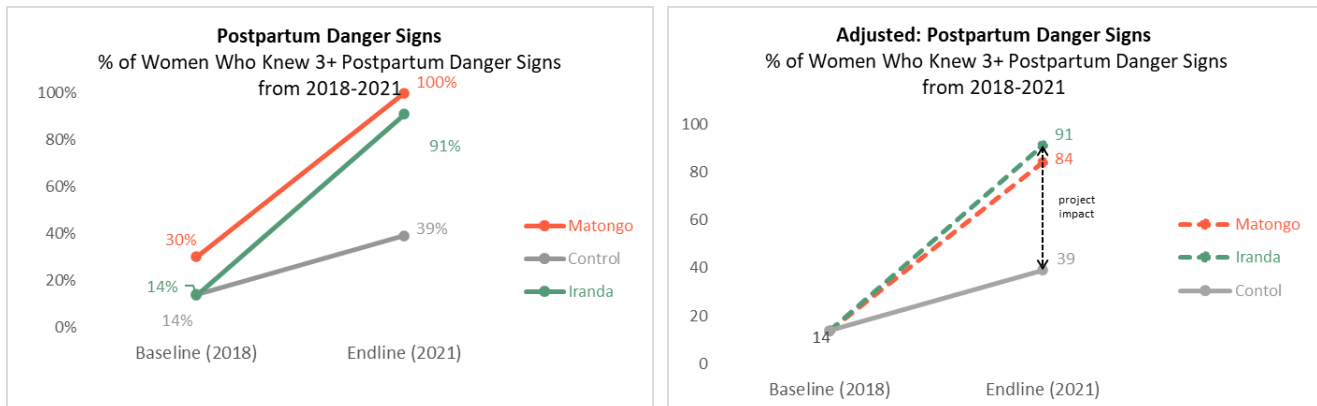


Figures 13 & 14. Baseline: Matongo: 19% [N=70], Iranda: 8% [N=110], Control: 11% [N=121]. Endline: Matongo: 89% [N=100], Iranda: 81% [N=100], Control: 20% [N=100]

All areas increased from baseline to endline time periods. Matongo (baseline: 19%; endline: 89%) and Iranda (baseline: 8%; endline: 81%) saw much higher and significant increase than the control (baseline: 11%; endline: 20%) with an overall 61 percentage point and 69 percentage point difference when compared to the control, respectively. This suggests the intervention positively impacted maternal delivery danger sign recognition in a significant way.

Maternal Knowledge: Postpartum Danger Signs

The proportion of interviewed women who could name 3 or more danger signs in the post-partum period for her newborn requiring immediate attention from a health professional.

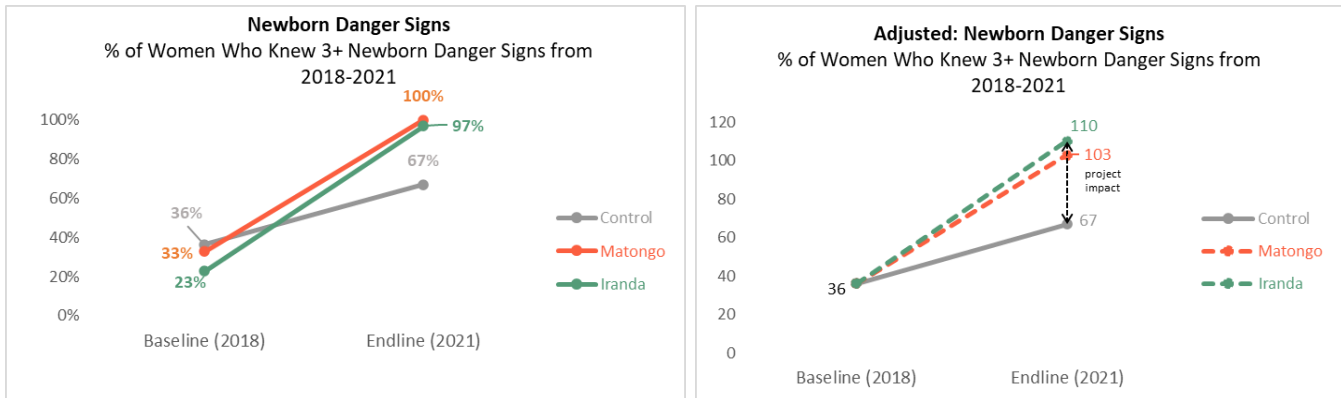


Figures 15 & 16. Baseline: Matongo: 30% [N=70], Iranda: 14% [N=110], Control: 14% [N=121]. Endline: Matongo: 100% [N=100], Iranda: 91% [N=100], Control: 39% [N=100]

From baseline to endline, an increase was seen in every catchment with minimal change in the control (baseline: 14%; endline: 39%--25% increase) and in Iranda (baseline: 14%; endline: 96%--82% increase) and Matongo (baseline: 30%; endline: 100%--70%). Matongo and Iranda both met the 30% significance level threshold. Overall, women who could name 3+ danger postpartum danger signs did increase in the intervention areas at a faster rate than the control, suggest the intervention affected the catchments significantly.

Maternal Knowledge: Newborn Danger Signs

The proportion of interviewed women who could name at least 3 danger signs where their newborn would require immediate attention from a medical professional.

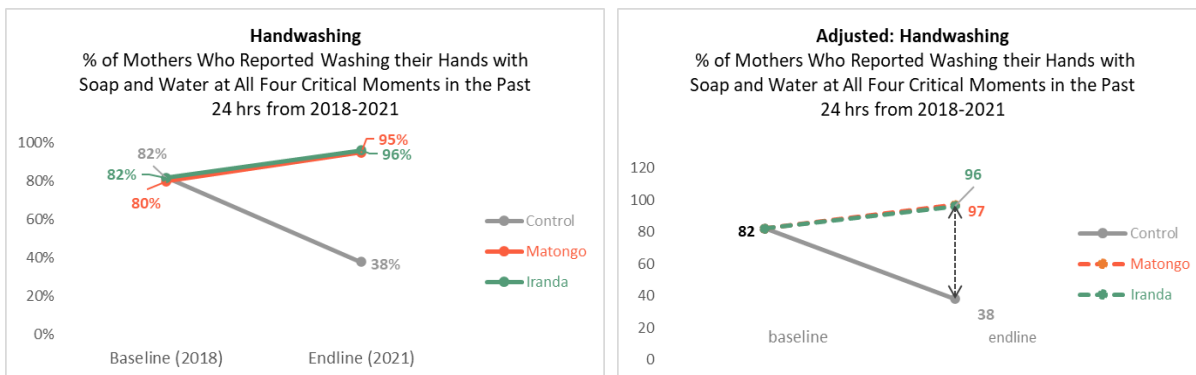


Figures 17 & 18. Baseline: Matongo: 33% [N=70], Iranda: 23% [N=110], Control: 36% [N=121]. Endline: Matongo: 100% [N=100], Iranda: 97% [N=100], Control: 67% [N=100]

An overall increase was seen in every area from baseline to endline. A significant, 74% increase was seen in Iranda (baseline: 23%; endline: 97%) and 67% increase in Matongo (baseline: 30%; endline: 100%). The control improved 31% (baseline: 36%; endline: 67%). While the two intervention catchments improved at a greater rate than the control catchment, the 31% control catchment percent improvement suggests further inquiry is need to understand the impact of the intervention on the newborn danger sign indicator.

Handwashing Hygiene

The proportion of women who, when interviewed, reported in the past 24 hours they washed their hands with soap and water at all the four critical moments: 1) before food preparation; 2) before feeding children; 3) after defecation; 4) after attending to a child who had defecated.

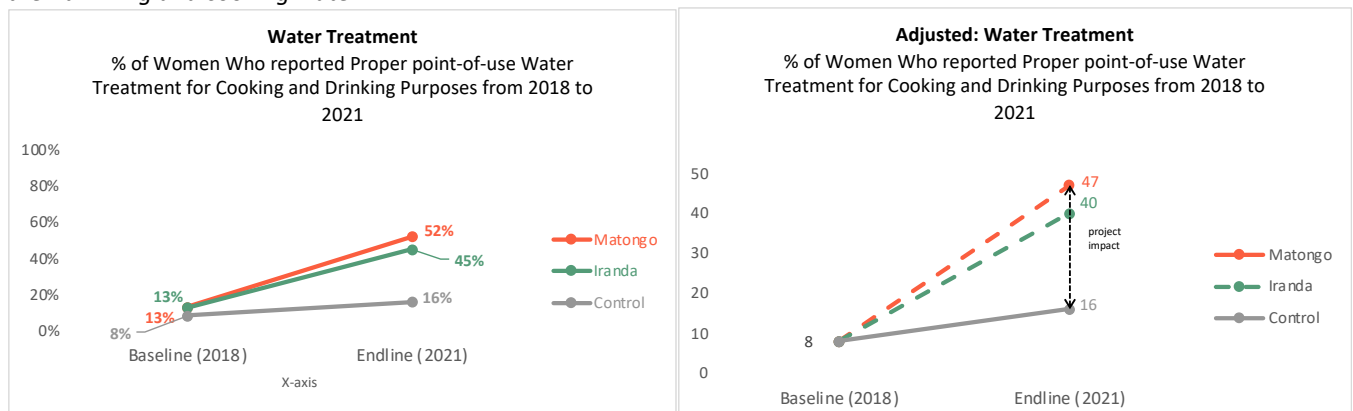


Figures 19 & 20. Baseline: Matongo: 80% [N=70], Iranda: 82% [N=110], Control: 82% [N=121]. Endline: Matongo: 95% [N=100], Iranda: 96% [N=100], Control: 38% [N=100]

The control area (baseline: 82%; endline: 38%) saw a 44% decrease between time periods of women who reported good handwashing hygiene. Both intervention catchments, Iranda (baseline: 82%; endline: 96%) and Matongo (baseline: 80%; endline: 95%), saw minimal positive change, 14% and 15% respectively. This slight positive increase suggests further inquiry is needed to more significantly impact handwashing rates among women in the area.

Drinking Water Point-of-Use Treatment

The proportion of women who, when interviewed stated their households are applying proper point-of-use (POU) water treatment by means of boiling, chlorination, SODIS, or regularly filtering (either the day of or the day before the interview) their drinking and cooking water.

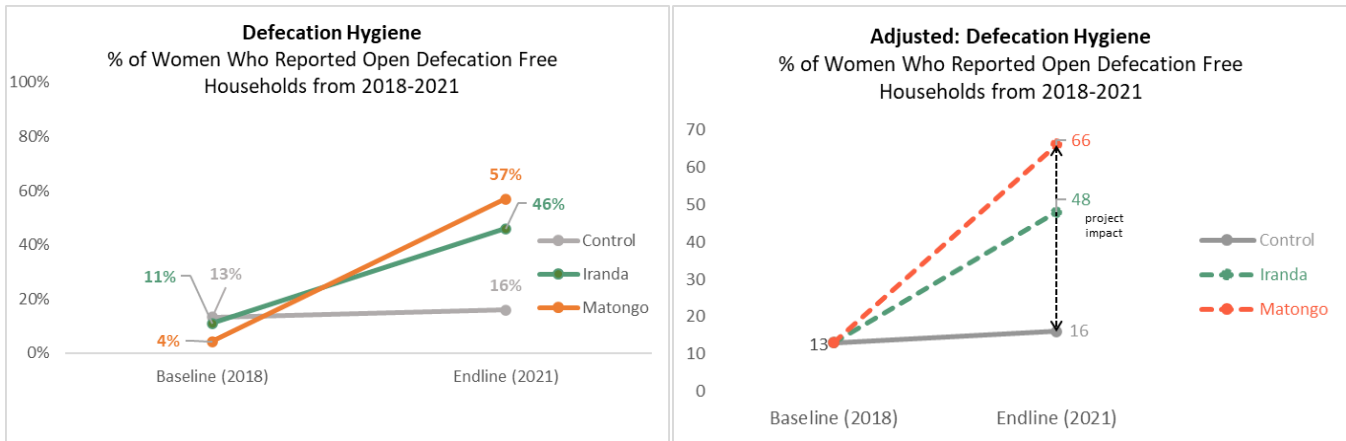


Figures 21 & 22. Baseline: Matongo: 13% [N=70], Iranda: 13% [N=110], Control: 8% [N=121]. Endline: Matongo: 52% [N=100], Iranda: 45% [N=100], Control: 16% [N=100]

The control (baseline: 8%; endline: 16%) saw minimal change from baseline to endline, with a difference of 8% from baseline to endline. In comparison, the difference seen in Matongo (baseline: 13%; endline: 52%) was significant at 39%. Iranda also improved 32% (baseline: 13%; endline: 45%) within the same time period, supporting that the intervention had a positive and significant effect.

Defecation Hygiene

The proportion of interviewed women who reported open defecation free households including: 1) having no open defecation site; 2) having a basic latrine facility with drop hole cover to prevent flies; 3) having a hand washing station (per observation by the interviewer).

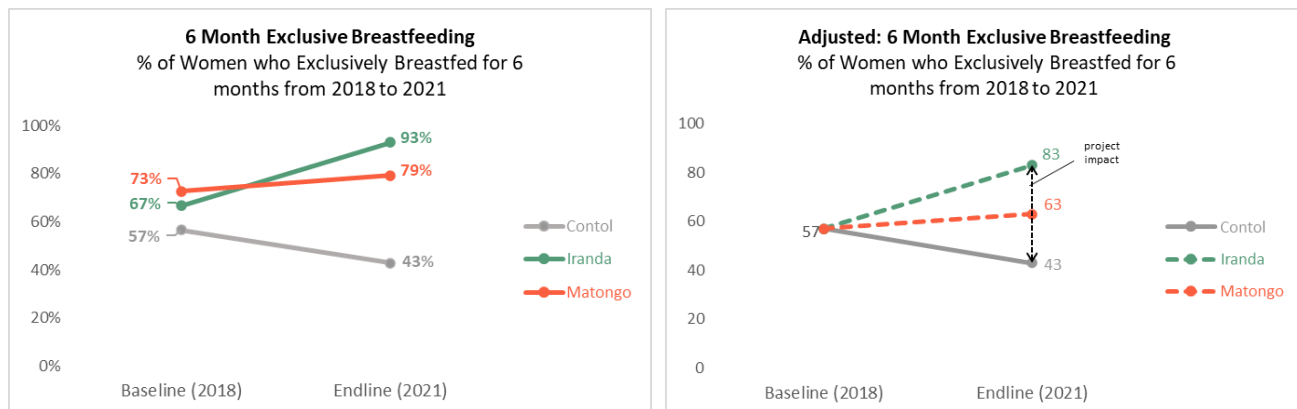


Figures 23 & 24. Baseline: Matongo: 4% [N=70], Iranda: 11% [N=110], Control: 13% [N=121]. Endline: Matongo: 57% [N=100], Iranda: 46% [N=100], Control: 16% [N=100]

The control (baseline: 13%; endline: 16%) saw a minimal 3% change from baseline to endline in comparison to the 53% difference seen in Matongo (baseline: 4%; endline: 57%) and 35% in Iranda (baseline: 11%; endline: 46%) within the same time period. Both intervention catchments underwent met the 30% change threshold, supporting that the KIKOP intervention had a significant and positive effect.

Exclusive Breastfeeding for 6 Months

The proportion of interviewed women who could reported exclusive breastfeeding their baby for their first 6 months of their life.



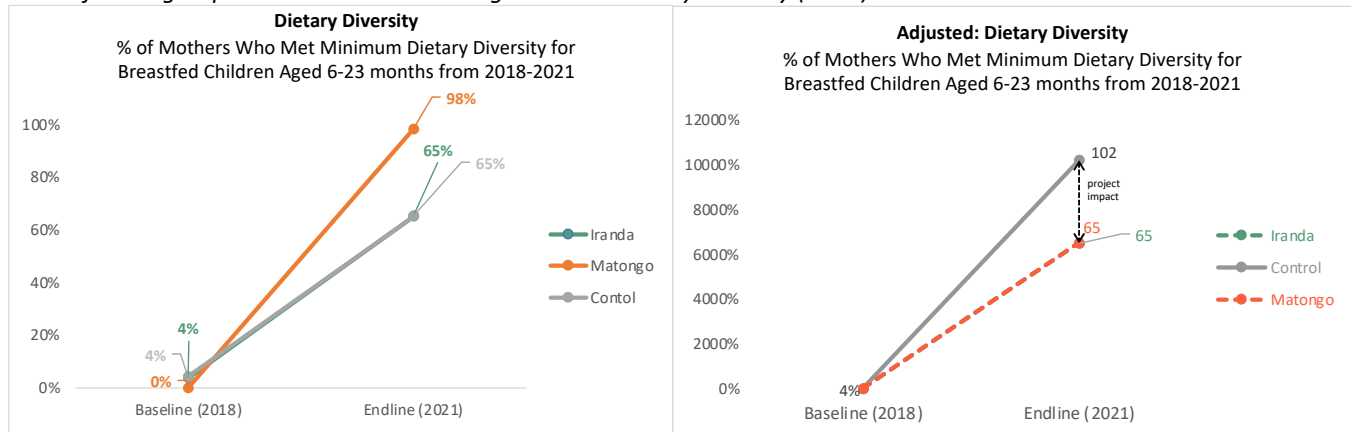
Figures 23 & 24. Baseline: Matongo: 73% [N=22], Iranda: 67% [N=24], Control: 57% [N=30]. Endline: Matongo 79% [N=81], Iranda: 93% [N=82], Control: 43% [N=66]

From baseline to endline, there was a 6% and 26% respective increase of women reporting exclusive breastfeeding for 6 months in Matongo (73% and endline: 79%) and Iranda (baseline: 67% to endline: 93%). A 14% decrease was seen in the control area (baseline: 57%; endline: 43%). Since no significant

impact was detected in either the control or intervention catchments, further inquiry is needed to better affect this indicator in the future.

Minimum Dietary Diversity (MDD)

The proportion of women who, when interviewed, reported giving their breastfed children, aged 6-23 months, foods from four or more of the following groups: 1) milk products; 2) grains, roots, and tubers; 3) vitamin A rich foods; 4) other fruits and vegetables; 5) eggs; 6) meat (including organ meat), poultry, fish, and shellfish; 7) legumes and nuts. Meeting four or more of these groups was considered meeting minimum dietary diversity (MDD).

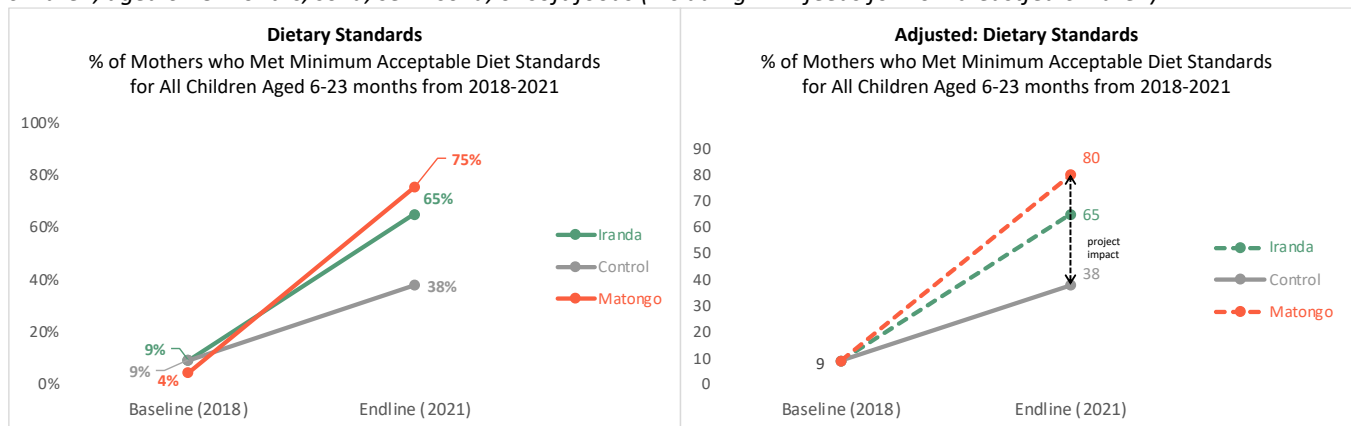


Figures 25 & 26. Baseline: Matongo: 0% [N=48], Iranda: 4% [N=55], Control: 4% [N=71]. Endline: Matongo 98% [N=79], Iranda: 65% [N=82], Control: 65% [N=67]

Overall, there was an increase seen in women reporting MDD in all catchment areas between the two time periods. The control (baseline: 4%; endline: 65%) improved by 61% while Iranda (baseline: 4%; endline: 64%) and Matongo (baseline: 0%; endline: 98%) increased by 60% and 98% respectively. Both intervention catchments met the significance threshold of 30%; however, Iranda did change similarly to the control, suggesting further inquiry is needed to better understand how to impact MDD in that catchment.

Minimum Acceptable Dietary Standards (MAD)

The proportion of interviewed women who met the minimum acceptable dietary (MAD) standard and reported giving their children, aged 6-23 months, solid, semi-solid, or soft foods (including milk feeds for non-breastfed children).

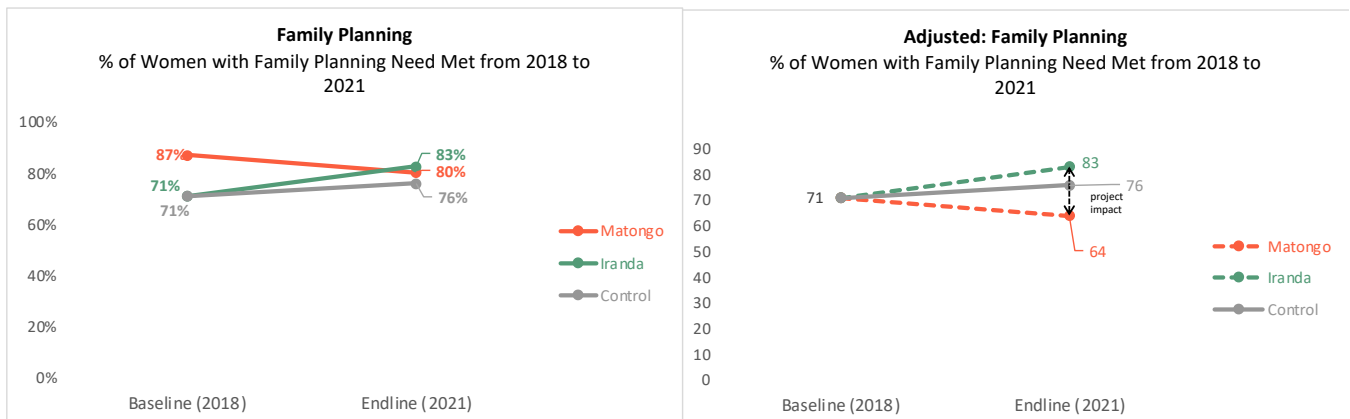


Figures 27 & 28. Baseline: Matongo: 4% [N=46], Iranda: 9% [N=55], Control: 9% [N=66]. Endline: Matongo 75% [N=57], Iranda: 65% [N=66], Control: 38% [N=52]

An increase was seen in women reporting MAD in all catchment areas between the baseline and endline periods. Matongo (baseline: 4%; endline: 75%) increased by 71% and Iranda (baseline: 9%; endline: 65%) by 56%, both meeting the significant threshold. The control (baseline: 9%; endline: 38%) improved by 29%. The results suggest the KIKOP intervention positively and significantly impacted MAD within the areas it targeted, Matongo and Iranda.

Family Planning

The proportion of interviewed non-pregnant women who stated that they are currently using a modern contraceptive method defined as an injection, implant, IUD, pills; sterilization (male or female), or diaphragm.



Figures 29 & 30. Baseline: Matongo: 87% [N=70], Iranda: 71% [N=107], Control: 71% [N=118]. Endline: Matongo 80% [N=97], Iranda: 83% [N=98], Control: 76% [N=96]

An increase was seen in women reporting family planning in Iranda and the control between the baseline and endline periods. Iranda increased (baseline: 71%; endline: 83%) by 12% while the control increased by 5% (baseline: 71%; endline: 76%). Matongo decreased by 7% (baseline: 87%; endline: 80%). The results suggest the KIKOP interventions were mixed and future efforts must be made to impact this area.

Discussion

Overall, significant (over 30% increase) programmatic impact in both catchments was seen in the following indicators below:

- Birth plan with 3+ components
- Pregnancy danger signs
- Delivery danger signs
- Postpartum danger signs
- Newborn danger signs
- Drinking water point-of-use treatment
- Defecation hygiene
- Minimum dietary diversity (MDD)

- Minimum acceptable dietary standards (MAD)

Below are the indicators that only met the 30% approval threshold in one catchment, Matongo:

- ≥ 4 prenatal visits verified by maternal health booklet
- Health facility delivery

Minimal or no impact was seen in the areas below:

- Respectful, culturally appropriate care during delivery
- Handwashing Hygiene
- Exclusive Breastfeeding for 6 Months
- Family Planning

The indicators highlighted above saw minimal impact. Furthermore, the indicator, “respectful, appropriate care” even slightly decreased in Matongo. For these indicators, further inquiry is needed to understand what can be done to support the minimal change they underwent in the three year intervention time period. It is recommended that KIKOP consider adjusting current programming and/or adding additional support in these area.

Nutrition Indicators

Little change was detected over the three-year period for the nutrition indicators, as seen in table 7, suggesting further inquiry is need understand how to significantly affect these areas in a positive way.

Potential areas for improvement include creating a more robust intervention and increasing the MoH’s support to better affect nutrition outcomes. It is also worth noting that Kisii County’s stunting levels are low comparatively for the region, so aggregating indicators in future reports by smaller age group could better highlight changes and programmatic impact.

Prenatal Care and Birth Planning

Prenatal care and birth planning are the best ways to promote a healthy pregnancy and birth process and to prevent complications. Regular prenatal care reduces both the mother and the child’s risk for complications and negative health outcomes. Furthermore, birth planning allows for coordination and logistical support to facilitate a smooth labor and birthing process.⁸ The two function together to achieve positive birth outcomes and support the mother and child’s health. Improving these indicators in Kisii County represent important markers of advancing maternal health in the region.

The KPC survey looked at 10 indicators related to the prenatal period, with an indicator on attainment of 4 or more prenatal visits, accompaniment to 1 or more ANC visit by a male partner, with the remaining 8 indicators relating to the creation of birth plan and its various components. Particularly for prenatal visits, seen in figures 3 and 4 above, results were mixed, with improvement seen in Matongo but not Iranda. “Mothers who had receive 4 or more ANC visits” increased by 34% in Matongo (46% to 80%) but decreased by 22% percent in Iranda (93% to 71%).

The control area saw more drastic reductions than either catchment, so KIKOP may have provided some protective effects in this area. Furthermore, during the beginning of the COVID-19 pandemic in 2020, health workers were on strike. This strike affected all birthing centers and left KIKOP nurses to attend to mothers alone and take on additional work with outpatient services. Iranda also lacked KIKOP nurses starting in June 2020, which could have contributed to the difference in ANC improvement between Iranda and Matongo.

Of the 8 indicators related to the birth plan, both Iranda and Matongo saw improvements, with the two highest improvements in both catchments being “mothers who had a birth plan with 3+ components.” The birth plan is an area that was emphasized during prenatal visits by CHVs. During the visits, mothers create a birth plan and then updated it at the second prenatal home visit. We expect that this directly led to a significant increase in the number of mothers who had a birth plan with three or more components.

Delivery

Delivery indicators include health facility delivery and respectful, culturally appropriate care. Respectful, culturally appropriate care is paramount to improving and making the birth process equitable. A safe, respectful, and appropriate environment allows sets the baby up for success in their life course and supports their right to a healthy life.⁹

The baseline indicator related to health facility delivery came from census data in Iranda and Matongo, and the baseline KPC in Mosoch Market. Both Matongo and Iranda saw a significant increase to 100% and 99% respectively. In Mosoch Market, the control catchment, a 11% decrease occurred from 2018 to 2021.

KIKOP dedicated substantial efforts to improving health facility delivery since it is considered one of the most important ways to reduce maternal and perinatal mortality. First, they expanded maternal services to 24 hours a day, 7 days a week, 365 days a year. Second, KIKOP engaged multiple stakeholders to improve health facility delivery. For example, TBAs were engaged and encouraged to bring the mothers to the health facility, and mothers were still encouraged to pay them for their services. Health facility delivery was included in outreach through Village Health Committees, Care Groups, and RHV. KIKOP nurses also helped to facilitate an atmosphere of trust and respect, often attending in-home visits with CHVs and leading sessions for Health Promoters. Overall, KIKOP nurses were an integral part of the positive maternal and child health outcomes.

Little or no improvement was seen between baseline and endline including, “respectful, appropriate care during delivery,” with only Matongo increasing by 24%. Potential reasons include a lack of KIKOP nurses, especially during the beginning stages of the COVID-19 pandemic. Further training is needed to increase awareness, while recommendations for the future involve a more in-depth differences-in-difference analysis, including regression to account for variation in participant demographics.

Childhood Illness and Care Seeking Behaviors

Significant efforts were put into care seeking behaviors for obstetric emergencies and neonatal conditions as a large number of maternal and newborn deaths occur due to delays in healthcare seeking.⁹

An increase in care seeking behavior and decrease in incidence of childhood illness were crucial for KIKOP to positively impacting maternal and child health outcomes within the Kisii County area. By improving care seeking behaviors, women are more likely to receive appropriate medical care in a timely manner, ultimately reducing negative health outcomes and the likelihood for adverse complications to arise. Furthermore, decreasing childhood illness is crucial to reducing U5 mortalities and improving health outcomes altogether.

In four out of four indicators related to care seeking behaviors for potential obstetric emergencies and care seeking for neonatal conditions, a low number of women responding to questions on obstetric complications created large confidence intervals where impact is unable to be determined. Additionally, results for care seeking for childhood illness were mixed. Future efforts are needed to understand *why* and how best to impact this area.

Mother's Knowledge of Danger Signs

A mother's knowledge of danger signs is crucial to healthcare seeking behaviors.¹⁰ Lack of knowledge and education about pregnancy complications are associated with delaying healthcare services, which can result in worse maternal health outcomes.¹¹ In order to affect maternal mortality rates in Kisii County, it was imperative to improve maternal knowledge on topics across the maternal and child health spectrum.

KPC results showed considerable improvement across all maternal knowledge indicators – mothers who can name three or more danger signs during pregnancy, labor/delivery, and newborn care. All of these indicators improved by more than 30% from baseline to endline.

These results suggest the community education aspects of KIKOP are impactful, particularly the effectiveness of the Care Group lessons and RHVs. During the study period, mothers in both catchments received lessons on danger signs in pregnancy, labor/delivery, postpartum and the neonatal period. Lessons on danger signs include role plays and activities. Unlike other health indicators, danger signs were reinforced throughout the 11 home visits conducted by CHVs from pregnancy until the child's second birthday, ultimately demonstrating the collective impact of Care Groups and RHVs.

Essential Newborn Actions (ENA) Practices

ENA practices are imperative for setting up children for a long, healthy life and improving their overall health outcomes. These practices include vaccination practices as well as immediate post-delivery care such as drying and wrapping, immediate breastfeeding (within an hour), cord care, and weighing and measuring.

In Iranda, mothers who reported all ENAs did increase modestly from 4% to 10%. However, within both Iranda and Matongo, BCG and OPVO vaccination rates from baseline to endline declined. Reasons for a decline in vaccination rate include a country-wide nurse strike from October 2020 to February 2021 over safety protocols and personal protective equipment during the COVID-19 outbreak. This strike affected both pre and post-natal mothers and their children.

Water, Sanitation and Hygiene

Water, sanitation, and hygiene are crucial to reducing largely preventable disease. Over 60% of all diarrheal deaths worldwide occur because of poor hygiene and sanitation and lack of adequate water.¹³ Improved sanitation promotes dignity, safety and school attendance, while reducing the effects of malnutrition.¹²

The KPC results showed improvements in the sanitation and hygiene indicators—handwashing hygiene, drinking water point of use treatment, defecation hygiene. The most significant indicator improvement were “mothers who regularly applied safe water treatment to drinking water” and “mothers who had an open defecation free household.” For safe water treatment, Matongo increased by 39% (from 13% to 52%) and for ODF households by 53% (from 4% to 57%). Iranda improved by 32% for water treatment (from 13 to 45%) and by 35% for ODF households (from 11% to 46%).

The large improvements suggest that large community efforts to educate were impactful. Care Group lessons often encouraged good sanitation practices with lessons covering latrines, washing, and proper waste disposal. Practical skills such as soap making, were also taught in these lessons, with CGVs even ensuring mothers have the necessary sanitation components. Repetition was also crucial, as Matongo and Iranda have both completed all water, sanitation and hygiene Care Group lessons more than once.

Young Child Feeding and Vitamin Supplementation

Feeding and supplementation practices, including exclusive breastfeeding, are fundamental building blocks, setting children U2 up for developmental success. By receiving appropriate nutrients and vitamins at pivotal times in the developmental continuum, stunting and wasting can be prevented. Deficiencies in these areas lead to negative health outcomes, with 45% of children U5 mortalities being linked to undernutrition. This undernutrition also disproportionately impacts those of lower socio-economic standing and in the Global South.¹⁴

Progress shown from the KPC results across feeding and supplement practices was present. Minimal acceptable dietary standards, minimal dietary diversity improved significantly in both intervention catchments. Vitamin A supplementation and breastfeeding practices in both Matongo and Iranda also improved but not by the 30% threshold. Future efforts must be made to better affect vitamin A and breastfeeding practices.

Family Planning

Family planning allows women to ensure they do not get pregnant too early or too late, improving maternal health and child survival. Contraception prevents sexual transmitted infections, such as HIV/AIDs, while also promotes gender empowerment.¹⁵

The KPC results were mixed, with Iranda improving by 12%, the control increasing by 5% ,and Matongo decreasing by 7%. These findings suggest future endeavors must be made to understand how to better impact this area positively.

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Appendices

Appendix 1.

Respondent Characteristics (all catchments)

Characteristic of Respondents (n=300)		n	%
Age (years) N=300	Median: 26		
	Mean: 26.58		
	Range: 30		
Age at first Pregnancy	Median: 18		
	Mean: 18.48		
	Range: 30		
Highest Education Level	None	2	1%
	Some lower (grades 1-3)	3	1%
	Completed lower primary	3	1%
	Some upper primary (class 4-7)	51	17%
	Completed upper primary	65	22%
	Some secondary	78	26%
	Completed Secondary	69	23%
	Some college/university	14	5%
	College/pre-university/university	14	5%
	Post-Graduate	0	0%
Other	1	0%	
Most Comfortable Language	English	3	1%
	Kiswahili	108	36%
	Kikisii	179	60%
	Luo	10	3%
	Luhya	0	0%
	Other	0	0%
Average Monthly Household Income (shillings)	Median: 5000		
	Mean: 6870.51		
	Range: 49500		
Amount Spent on Medical Services in the past month (per household, shillings)	Median: 200		17%
	Mean: 914.64		
	Range: 30000		
Marital Status	Married	244	81%
	Married, not staying together	2	1%
	Separated	7	2%
	Divorced	0	0%
	Staying together, not married	0	0%
	Widowed	0	0%

	Single (never married)	47	16%
Current Occupation	Formal employment	4	
	Informal employment	17	
	Casual labour	34	
	Own business	47	
	Petty hawking	18	
	Farming	147	
	Dairy farming	0	
	Dependent	43	
	Housewife	45	
	Other	1	
Religion	Christian	299	100%
	Muslim	0	0%
	Traditional	0	0%
	Hindu	0	0%
	Other	0	0%
Walking Distance to Health Facility	0-14 mins	40	13%
	15-29 mins	121	40%
	30-44 mins	106	35%
	45-59 mins	14	5%
	1hour+ (>1 hr)	18	6%
	Does not know	1	0%
Floor of Home Material	Earth/dirt/smeared with cowdung	212	71%
	Concrete/ cement	121	24%
	Tile/vinyl/linoleum	106	6%
	Other	14	0%
Lactation Status	Lactating currently	251	84%
	Not lactating	49	16%
Current Pregnancy Status	Pregnant	3	1%
	Not Pregnant	296	99%
	Unsure	1	0%

Appendix 2. 2021 Questionnaire

The questionnaire can be viewed under “questionnaire” at:
<https://www.curamericas.org/our-work/curamericas-kenya/>

Appendix 3.
Consent forms

QUESTIONNAIRE
KNOWLEDGE PRACTICE AND COVERAGE (KPC) SURVEY
OF WOMEN WITH CHILDREN UNDER 2 YEARS OF AGE

KITUTU CHACHE SOUTH SUB-COUNTY MINISTRY OF HEALTH
IN PARTNERSHIP WITH CURAMERICAS GLOBAL
INFORMED CONSENT

Explain to the mother: My name is _____ and I am part of the Kisii County Ministry of Health and Curamericas team conducting a survey on women's health and nutrition of children 0-23 months in Kitutu Chache South sub-county. The information you provide will help to plan for health and nutrition services in your community. Everything you tell me will be confidential and will not be disclosed to anyone without your consent. Your name will not appear on any document or report. If I ask you any question that you feel you don't want to answer, just let me know and I will go on to the next question. You can stop the interview at any time. In case you need more information about the survey, you may contact.....of MOH. You have the right not to participate in the survey. However, we encourage you to participate to help your community. The interview will take not more than 45 minutes. Do you have any question?

Will you participate in the survey?

IF YES → Sign (or fingerprint) below and proceed with the interview

IF NO → Go to the next mother on the list

Sign (or thumbprint) of the mother or interviewee: _____

Appendix 4.
Baseline KPC report

The questionnaire can be viewed under “Kisii KPC Survey Report 2018 ” at:
<https://www.curamericas.org/our-work/curamericas-kenya/>

Appendix 5.

All indicators from KPC survey by catchment

Matongo: baseline (2018) to endline (2021)

	2018 KPC					KPC 2021				
	Matongo					Matongo				
	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)
Mothers who received 4+ ANC visits verified by MCH booklet	32	70	46%	34%	58%	80	100	80%	71%	87%
Mother's whose male partner accompanied them to at least 1 ANC visit	25	70	36%	25%	48%	54	100	54%	44%	64%
Mothers who had a birth plan with 3+ components	11	70	16%	8%	26%	78	100	78%	69%	86%
Mothers who had a birth plan with all 5 components	1	70	1%	0%	8%	43	100	43%	33%	53%
Mothers who had birth plan (any number of components)	39	70	56%	43%	68%	98	100	98%	93%	100%
Mother's whose birth plan contained delivery location	20	70	29%	18%	41%	79	100	79%	70%	87%
Mothers whose birth plan contained transportation	18	70	26%	16%	38%	75	100	75%	65%	83%
Mothers whose birth plan contained funds for delivery	21	70	30%	20%	42%	95	100	95%	89%	98%
Mothers whose birth plan contained a person to accompany them to facility for delivery	5	70	7%	2%	16%	72	100	72%	62%	81%
Mothers whose birth plan contained a person to watch their children/home	3	70	4%	1%	12%	51	100	51%	41%	61%
Mothers who had a health facility delivery	66	70	94%	*	*	100	100	100%	96%	100%
Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	8	70	11%	5%	21%	35	100	35%	26%	45%
Mothers who reported that they received care for their obstetric complications	21	22	95%	77%	100%	39	50	78%	64%	88%
Mothers who had a complication during pregnancy and received care	19	19	100%	82%	100%	18	20	90%	68%	99%
Mothers who had a complication during delivery and received care	6	6	100%	54%	100%	14	15	93%	38%	87%
Mothers who had a complication during postpartum and received care	2	4	50%	7%	93%	11	15	73%	45%	92%
Mothers who can name at least 3 danger signs during pregnancy	22	70	31%	21%	44%	99	100	99%	95%	100%
Mothers who can name at least 3 danger signs during delivery	13	70	19%	10%	30%	89	100	89%	81%	94%
Mothers who can name at least 3 danger signs during postpartum	21	70	30%	20%	42%	100	100	100%	96%	100%
Mothers who can name at least 3 newborn danger signs	23	70	33%	22%	45%	100	100	100%	96%	100%
Mothers who reported that their newborn received all 7 essential newborn actions (ENAs)	2	68	3%	0%	10%	18	100	18%	11%	27%
Mothers who reported that their newborn was dried and wrapped with warm cloth/blanket after delivery (ENA 1)	60	70	86%	75%	93%	93	99	94%	88%	98%

*Indicator was done as a census. Since a few households may have been missed, assuming no CI

Mothers who reported that their newborn was breastfed within an hour of birth (ENA 2)	54	70	77%	66%	86%	87	98	89%	81%	94%
Mothers who reported that their newborn received clean cord care (ENA 3)	17	70	24%	15%	36%	87	95	92%	84%	96%
Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	58	67	87%	76%	94%	42	98	43%	33%	53%
Mothers with MNCH booklet that shows that their 6-23 month child received Vitamin A supplementation in the last 6 months	22	52	42%	29%	57%	51	81	63%	52%	73%
Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	21	49	43%	29%	58%	23	28	82%	63%	94%
Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	4	29	14%	4%	32%	10	21	48%	26%	70%
Mothers with MNCH booklet that shows that their 18-23 month old child received Vitamin A dose 3	1	8	13%	0%	53%	18	32	56%	38%	74%
Mothers with MNCH booklet that shows that their 12-23 month old child received deworming medicine in the past 6 months	3	52	6%	1%	16%	26	53	49%	35%	63%
Immunization of young children (12 months)	41	43	95%	84%	99%	14	21	67%	43%	85%
Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	56	70	80%	69%	89%	95	100	95%	89%	98%
Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	40	70	57%	45%	69%	75	100	75%	65%	83%
Mothers who state that she safely disposed of their child's feces the last time s/he passed stool	66	70	94%	86%	98%	98	100	98%	93%	100%
Mothers who state that they regularly apply safe water treatment to drinking water	9	70	13%	6%	23%	52	100	52%	42%	62%
Percentage of mothers who have an Open Defecation Free (ODF) Household	3	70	4%	1%	12%	57	100	57%	47%	67%
Mothers who report that their child was ill in the last 2 weeks	34	70	49%	36%	61%	57	100	57%	47%	67%
Mothers who report that their child had diarrhea in the last two weeks and that that they provided ORS packets/salts	3	34	9%	2%	24%	13	17	76%	50%	93%
Mothers who report that their child had diarrhea in the last two weeks and they increased feeding and fluids	2	4	50%	7%	93%	0	17	0%	0%	20%
Mothers who report that their child was diagnosed with malaria in the last 2 weeks and received ACT treatment	1	1	100%	3%	100%	5	5	100%	48%	100%
Mothers whose child presented with pneumonia symptoms in the last two weeks who were taking to a health care provider within 48 hours	6	14	43%	18%	71%	12	19	63%	38%	84%
Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	61	70	87%	77%	94%	78	97	80%	71%	88%
Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	17	17	100%	80%	100%	19	19	100%	82%	100%
Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	16	22	73%	50%	89%	23	29	79%	60%	92%
Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity (MDD)	0	48	0%	0%	7%	43	57	75%	43%	66%
Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency (MMF)	1	48	2%	0%	11%	57	57	100%	94%	100%
Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	2	46	4%	1%	15%	43	57	75%	55%	80%

Iranda: baseline (2018) to endline (2021)

	2018 KPC					KPC2021				
	Iranda					Iranda				
	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)
Mothers who received 4+ ANC visits verified by MCH booklet	102	110	93%	86%	95%	71	100	71%	61%	80%
Mother's whose male partner accompanied them to at least 1 ANC visit	43	110	39%	29%	49%	53	100	53%	43%	63%
Mothers who had a birth plan with 3+ components	16	110	15%	9%	23%	71	100	71%	61%	80%
Mothers who had a birth plan with all 5 components	1	110	1%	0%	5%	26	100	26%	18%	36%
Mothers who had birth plan (any number of components)	68	110	62%	53%	71%	91	100	91%	84%	96%
Mother's whose birth plan contained delivery location	40	110	36%	27%	46%	75	100	75%	65%	83%
Mothers whose birth plan contained transportation	32	110	29%	21%	39%	69	100	69%	59%	78%
Mothers whose birth plan contained funds for delivery	34	110	31%	22%	40%	75	100	75%	65%	83%
Mothers whose birth plan contained a person to accompany them to facility for delivery	12	110	11%	6%	18%	60	100	60%	50%	70%
Mothers whose birth plan contained a person to watch their children/home	10	110	9%	4%	16%	42	100	42%	32%	52%
Mothers who had a health facility delivery	103	110	94%	*	*	99	100	99%	95%	100%
Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	18	110	16%	10%	25%	10	99	10%	5%	18%
Mothers who reported that they received care for their obstetric complications	33	38	87%	72%	96%	12	12	100%	73%	100%
Mothers who had a complication during pregnancy and received care	30	30	100%	88%	100%	17	19	89%	67%	99%
Mothers who had a complication during delivery and received care	11	11	100%	72%	100%	12	12	100%	28%	83%
Mothers who had a complication during postpartum and received care	8	10	80%	44%	98%	6	7	86%	42%	100%
Mothers who can name at least 3 danger signs during pregnancy	27	110	25%	17%	34%	93	100	93%	86%	97%
Mothers who can name at least 3 danger signs during delivery	9	110	8%	4%	15%	81	100	81%	72%	88%
Mothers who can name at least 3 danger signs during postpartum	15	110	14%	8%	22%	91	100	91%	84%	96%
Mothers who can name at least 3 newborn danger signs	25	110	23%	15%	32%	97	100	97%	91%	99%
Mothers who reported that their newborn received all 7 essential newborn actions (ENAs)	4	109	4%	1%	9%	10	100	10%	5%	18%
Mothers who reported that their newborn was dried and wrapped with warm cloth/blanket after delivery (ENA 1)	96	110	87%	80%	93%	93	99	94%	88%	98%

Mothers who reported that their newborn was breastfed within an hour of birth (ENA 2)	74	110	67%	58%	76%	86	100	86%	78%	92%
Mothers who reported that their newborn received clean cord care (ENA 3)	26	110	24%	16%	33%	99	100	99%	95%	100%
Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	97	102	95%	89%	98%	26	91	29%	20%	39%
Mothers with MNCH booklet that shows that their 6-23 month child received Vitamin A supplementation in the last 6 months	46	72	64%	52%	75%	57	81	70%	59%	80%
Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	41	63	65%	52%	77%	20	29	69%	49%	85%
Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	22	43	51%	35%	67%	19	25	76%	55%	91%
Mothers with MNCH booklet that shows that their 18-23 month old child received Vitamin A dose 3	12	23	52%	31%	73%	18	27	67%	46%	83%
Mothers with MNCH booklet that shows that their 12-23 month old child received deworming medicine in the past 6 months	10	72	14%	7%	24%	35	52	67%	53%	80%
Immunization of young children (12 months)	65	68	96%	88%	99%	18	25	72%	51%	88%
Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	90	110	82%	73%	89%	96	100	96%	90%	99%
Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	59	110	54%	44%	63%	77	100	77%	68%	85%
Mothers who state that she safely disposed of their child's feces the last time s/he passed stool	105	110	95%	90%	99%	100	100	100%	96%	100%
Mothers who state that they regularly apply safe water treatment to drinking water	14	110	13%	7%	20%	45	100	45%	35%	55%
Percentage of mothers who have an Open Defecation Free (ODF) Household	12	110	11%	6%	18%	46	100	46%	36%	56%
Mothers who report that their child was ill in the last 2 weeks	55	110	50%	40%	60%	25	100	25%	17%	35%
Mothers who report that their child had diarrhea in the last two weeks and that that they provided ORS packets/salts	2	55	4%	0%	13%	1	3	33%	1%	91%
Mothers who report that their child had diarrhea in the last two weeks and they increased feeding and fluids	1	3	33%	1%	91%	0	3	0%	0%	71%
Mothers who report that their child was diagnosed with malaria in the last 2 weeks and received ACT treatment	2	4	50%	7%	93%	3	3	100%	29%	100%
Mothers whose child presented with pneumonia symptoms in the last two weeks who were taking to a health care provider within 48 hours	12	21	57%	34%	78%	5	5	100%	48%	100%
Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	76	107	71%	61%	79%	81	98	83%	74%	90%
Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	38	38	100%	91%	100%	18	18	100%	81%	100%
Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	16	24	67%	45%	84%	27	29	93%	77%	99%
Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity (MDD)	2	55	4%	5%	24%	43	66	65%	41%	64%
Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency (MMF)	3	55	5%	1%	15%	65	66	98%	92%	100%
Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	5	55	9%	3%	20%	43	66	65%	45%	70%

Mosocho Market (control): baseline (2018) to endline (2021)

	2018 KPC					KPC2021				
	Mosocho Market					Mosocho Market				
	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)	Numerator	Denominator	%	CI Lower (95%)	CI Upper (95%)
Mothers who received 4+ ANC visits verified by MCH booklet	109	121	90%	83%	94%	45	100	45%	35%	55%
Mother's whose male partner accompanied them to at least 1 ANC visit	41	121	34%	26%	43%	30	100	30%	21%	40%
Mothers who had a birth plan with 3+ components	21	121	17%	11%	25%	26	100	26%	18%	36%
Mothers who had a birth plan with all 5 components	1	121	1%	0%	5%	2	100	2%	0%	7%
Mothers who had birth plan (any number of components)	76	121	63%	54%	71%	49	100	49%	39%	59%
Mother's whose birth plan contained delivery location	47	121	39%	30%	48%	34	100	34%	25%	44%
Mothers whose birth plan contained transportation	35	121	29%	21%	38%	20	100	20%	13%	29%
Mothers whose birth plan contained funds for delivery	49	121	40%	32%	50%	42	100	42%	32%	52%
Mothers whose birth plan contained a person to accompany them to facility for delivery	10	121	8%	4%	15%	21	100	21%	13%	30%
Mothers whose birth plan contained a person to watch their children/home	3	121	2%	1%	7%	9	100	9%	4%	16%
Mothers who had a health facility delivery	111	121	92%	85%	96%	81	100	81%	72%	88%
Mothers who reported that they received respectful, culturally appropriate care during their health facility delivery	28	121	23%	16%	32%	0	81	0%	0%	4%
Mothers who reported that they received care for their obstetric complications	27	32	84%	67%	95%	31	38	82%	66%	92%
Mothers who had a complication during pregnancy and received care	27	27	100%	90%	100%	17	20	85%	62%	97%
Mothers who had a complication during delivery and received care	8	8	100%	63%	100%	7	7	100%	18%	88%
Mothers who had a complication during postpartum and received care	3	5	60%	15%	95%	10	11	91%	59%	100%
Mothers who can name at least 3 danger signs during pregnancy	30	121	25%	17%	34%	39	100	39%	29%	49%
Mothers who can name at least 3 danger signs during delivery	13	121	11%	6%	18%	20	100	20%	13%	29%
Mothers who can name at least 3 danger signs during postpartum	17	121	14%	8%	22%	39	100	39%	29%	49%
Mothers who can name at least 3 newborn danger signs	44	121	36%	28%	46%	67	100	67%	57%	76%
Mothers who reported that their newborn received all 7 essential newborn actions (ENAs)	3	115	3%	1%	7%	0	100	0%	0%	4%
Mothers who reported that their newborn was dried and wrapped with warm cloth/blanket after delivery (ENA 1)	100	121	83%	74%	89%	89	98	91%	83%	96%

Mothers who reported that their newborn was breastfed within an hour of birth (ENA 2)	74	121	61%	52%	70%	60	96	63%	52%	72%
Mothers who reported that their newborn received clean cord care (ENA 3)	23	121	19%	13%	27%	63	96	66%	55%	75%
Mothers who reported that their newborn received BCG and OPVO vaccinations (ENA 6 and 7)	95	109	87%	79%	93%	13	48	27%	15%	42%
Mothers with MNCH booklet that shows that their 6-23 month child received Vitamin A supplementation in the last 6 months	57	89	64%	53%	74%	41	61	67%	54%	79%
Mothers with MNCH booklet that shows that their 6-11 month old child received Vitamin A dose 1	56	79	71%	60%	81%	19	28	68%	48%	84%
Mothers with MNCH booklet that shows that their 12-17 month old child received Vitamin A dose 2	13	37	35%	20%	53%	10	15	67%	38%	88%
Mothers with MNCH booklet that shows that their 18-23 month old child received Vitamin A dose 3	5	8	63%	24%	91%	12	18	67%	41%	87%
Mothers with MNCH booklet that shows that their 12-23 month old child received deworming medicine in the past 6 months	7	89	8%	3%	16%	8	18	44%	22%	69%
Immunization of young children (12 months)	0	0	0%	0%	0%	12	15	80%	51%	96%
Mothers who report that in the past 24 hours they washed their hands with soap and water at all the four critical moments	99	121	82%	52%	70%	38	100	38%	28%	48%
Mothers who state that their household stores all of their potable water safely (verified through interviewer observation)	49	121	40%	32%	50%	51	100	51%	41%	61%
Mothers who state that she safely disposed of their child's feces the last time s/he passed stool	117	121	97%	92%	99%	87	100	87%	79%	93%
Mothers who state that they regularly apply safe water treatment to drinking water	10	121	8%	4%	15%	16	100	16%	9%	25%
Percentage of mothers who have an Open Defecation Free (ODF) Household	16	121	13%	8%	21%	16	100	16%	9%	25%
Mothers who report that their child was ill in the last 2 weeks	41	121	34%	26%	43%	42	100	42%	32%	52%
Mothers who report that their child had diarrhea in the last two weeks and that they provided ORS packets/salts	0	41	0%	0%	9%	7	13	54%	25%	81%
Mothers who report that their child had diarrhea in the last two weeks and they increased feeding and fluids	0	0	0%	N/A	N/A	0	13	0%	0%	25%
Mothers who report that their child was diagnosed with malaria in the last 2 weeks and received ACT treatment	6	8	75%	35%	97%	3	7	43%	10%	82%
Mothers whose child presented with pneumonia symptoms in the last two weeks who were taking to a health care provider within 48 hours	0	0	0%	N/A	N/A	6	13	46%	19%	75%
Non-pregnant mothers who state that they do not want to get pregnant and who are currently using a modern method of family planning	84	118	71%	62%	79%	73	96	76%	66%	84%
Mothers who state that they practiced exclusive breast feeding with their 0-5 month old child yesterday	31	32	97%	84%	100%	33	34	97%	85%	100%
Mothers of children 6-11 months who state that they practiced exclusive breast feeding for the first 6 months	17	30	57%	37%	75%	12	28	43%	24%	63%
Mothers of breastfed children 6-23 months who state that they practiced minimum dietary diversity (MDD)	3	71	4%	1%	12%	20	52	38%	19%	42%
Mothers of breastfed children 6-23 months who state that they practiced minimum meal frequency (MMF)	1	71	1%	0%	8%	45	52	87%	74%	94%
Mothers of breastfed children 6-23 months who provided a minimal acceptable diet (MAD)	6	66	9%	3%	19%	20	52	38%	19%	45%