

Supplementary Tables

Table S1: Counts of missing data for primary, secondary outcomes and vaccine outcomes

	Control (N = 728)	Intervention (N = 822)
Facility delivery	24 (3.30%)	15 (1.82%)
Adequate ANC care	0 (0%)	0 (0%)
Postnatal CHV visit	14 (1.92%)	20 (2.43%)
Exclusive breast feeding for 6 months	53 (7.28%)	47 (5.72%)
Current use of family planning	7 (0.96%)	13 (1.58%)
Current use of long-term family planning methods	256 (35.16%)	241 (29.32%)
Missing vaccine	-	-
Infant < 12 months at end line	-	-
Infants who received OPV 0 within 2 weeks of birth	79 (10.85%)	117 (14.23%)
Infants who received Measles I by 12 months of age	160 (21.98%)	252 (30.66%)
Fully-immunized infants (≤ 12 months) per WHO standards	159 (21.84%)	244 (29.68%)
Fully-immunized infants (≤ 12 months) per Republic of Kenya MOH standards	159 (21.84%)	243 (29.56%)
Child at least 12 months at end line		
Infants who received OPV 0 within 2 weeks of birth	92 (12.64%)	136 (16.55%)
Infants who received Measles I by 12 months of age	96 (13.19%)	155 (18.86%)
Fully-immunized infants (≤ 12 months) per WHO standards	101 (13.87%)	161 (19.59%)
Fully-immunized infants (≤ 12 months) per Republic of Kenya MOH standards	103 (14.15%)	161 (19.59%)
Missing age at end line		
Infants who received OPV 0 within 2 weeks of birth	34 (4.67%)	27 (3.28%)
Infants who received Measles I by 12 months of age	34 (4.67%)	27 (3.28%)
Fully-immunized infants (≤ 12 months) per WHO standards	34 (4.67%)	27 (3.28%)
Fully-immunized infants (≤ 12 months) per Republic of Kenya MOH standards	34 (4.67%)	27 (3.28%)

Table S2. Baseline characteristics for complete trial cohort (including individuals lost to follow-up)

	Completed Trial (N = 1550)	Lost to follow-up (N = 370)
Maternal age	26.89 (6.40)	24.25 (5.74)
Gestational age (weeks) at enrollment, median [IQR]	22.0 [18.0, 25.0]	22.0 [16.0, 24.0]
Poverty probability index score*	63.80 (17.06)	55.10 (20.09)
Sub-county		
Cherangany	419 (27.0)	67 (18.1)
Kiminini	349 (22.5)	105 (28.4)
Kwanza	398 (25.7)	82 (22.2)
Saboti	384 (24.8)	116 (31.4)
Previously pregnant	1193 (76.9)	283 (76.5)
Parity	2.35 (1.56)	1.88 (1.39)
Previous modern contraceptive use		
Yes	703 (58.9)	121 (42.8)
No	424 (35.5)	143 (50.5)
Missing	66 (5.5)	19 (6.7)

Previous facility delivery		
Yes	507 (42.5)	89 (31.4)
No	323 (27.1)	66 (23.3)
Missing	363 (30.4)	128 (45.2)
Total ANC visits in previous pregnancy		
0	27 (2.3)	3 (1.1)
1	40 (3.4)	13 (4.6)
2	68 (5.7)	14 (4.9)
3	247 (20.7)	45 (15.9)
4	307 (25.7)	45 (15.9)
>4	128 (10.7)	26 (9.2)
Missing	376 (31.5)	137 (48.4)
Previous[^]		
Miscarriage	49 (4.1)	10 (3.5)
Stillbirth	25 (2.1)	4 (1.4)
Neonatal death	13 (1.1)	3 (1.1)
Infant death	13 (1.1)	0 (0.0)
Child death under 5	8 (0.7)	1 (0.4)
Child death over 5	5 (0.4)	0 (0.0)

*Scores and % poverty likelihood calculated using validated 2015 Kenya Poverty Probability Index.

[^]Miscarriage (up to 28 weeks gestation); stillbirth (after 28 weeks gestation); neonatal death (0-28 days old); infant death (1-12 months old); child death (1-5 years old).

Table S3: Baseline characteristics of intervention analysis cohort (by *Chamas* attendance)

	Never attended <i>Chamas</i> (N=223)	Attended <i>Chamas</i> at least once (N=599)
Maternal age	26.95 (7.05)	27.16 (6.37)
Marital status		
Divorced/separation	5 (2.2%)	12 (2.0%)
Married	180 (80.7%)	506 (84.5%)
Single	36 (16.1%)	79 (13.2%)
Widowed	2 (0.9%)	2 (0.3%)
Maternal education		
College or higher	15 (6.7%)	31 (5.2%)
Secondary or post-primary	72 (32.3%)	178 (29.7%)
Primary	108 (48.4%)	312 (52.1%)
Pre-primary or none	27 (12.1%)	75 (12.5%)
Occupation		
Contract/temporary worker	9 (4.0%)	39 (6.5%)
Permanently employed	6 (2.7%)	4 (0.7%)
Self employed	65 (29.1%)	182 (30.4%)
Unemployed	143 (64.1%)	373 (62.3%)
Health insurance coverage at time of delivery		
Yes	129 (57.8%)	390 (65.1%)
No	85 (38.1%)	200 (33.4%)
Poverty probability index score	55.74 (18.20)	52.79 (19.87)
Sub-county		
Cherangany	87 (39.0%)	124 (20.7%)
Kiminiini	55 (24.7%)	117 (19.5%)
Kwanza	60 (26.9%)	156 (26.0%)
Saboti	21 (9.4%)	202 (33.7%)

Table S4: Sensitivity analyses of primary and secondary outcomes

	Unadjusted (primary)		Adjusted*		Unadjusted with imputation**		Adjusted* with imputation		Including only women attending at least one Chama	
	Odds ratio (95% CI); p-value	Risk difference (95% CI)	Odds ratio (95% CI); p-value	Risk difference (95% CI)	Odds ratio (95% CI); p-value	Risk difference (95% CI)	Odds ratio (95% CI); p-value	Risk difference (95% CI)	Odds ratio (95% CI); p-value	Risk difference (95% CI)
Facility-based delivery	1.58 (0.969, 2.55); 0.057	7.4% (3.0%, 12.5%)	1.59 (1.02, 2.47); 0.042	6.4% (2.0%, 10.4%)	1.55 (0.96, 2.50); 0.072	7.55% (3.02%, 12.32%)	1.62 (1.06, 2.49); 0.004	7.1% (3.0%, 11.4%)	1.43 (0.92, 2.24); 0.112	5.2% (1.5%, 9.5%)
Adequate ANC care	1.18 (0.82, 1.68); 0.375	3.2% (-1.5%, 7.7%)	1.19 (0.84, 1.69); 0.331	3.2% (-1.5%, 7.9%)	1.18 (0.82, 1.68); 0.375	3.57% (-1.17%, 8.62%)	1.18 (0.84, 1.64); 0.336	3.5% (-1.1%, 8.0%)	1.18 (0.79, 1.75); 0.423	3.0% (-1.4%, 8.0%)
Postnatal CHV visit	3.22 (1.50, 6.93); 0.003	15.3% (12.0%, 19.6%)	3.37 (1.55, 7.34); 0.002	15.7% (12.1%, 21.8%)	3.13 (1.91, 5.12); <0.001	16.02% (11.44%, 20.79%)	3.13 (1.81, 5.42); <0.001	16.0% (11.3%, 20.6%)	4.05 (2.00, 8.20); <0.001	19.6 (14.4%, 25.0%)
Exclusive breast feeding for 6 months	1.77 (1.12, 2.80); 0.014	11.9% (7.2%, 16.9%)	1.75 (1.10, 2.80); 0.019	11.6% (7.0%, 17.1%)	1.75 (1.11, 2.76); 0.016	11.9% (6.64%, 17.16%)	1.77 (1.12, 2.80); 0.014	11.96% (6.8%, 17.0%)	1.96 (1.20, 3.21); 0.007	13.6% (7.8%, 19.8%)
Modern contraceptive use	1.41 (1.03, 1.93); 0.034	7.2% (2.6%, 12.9%)	1.44 (1.00, 2.05); 0.047	6.8% (3.1%, 13.1%)	1.41 (1.02, 1.94); 0.035	7.6% (2.59%, 12.38%)	1.44 (1.04, 1.98); 0.026	7.2% (3.1%, 12.2%)	1.35 (0.92, 1.98); 0.122	5.7% (0.7%, 11.1%)
Long-acting reversible contraceptive use	1.34 (0.95, 1.91); 0.099	7.1% (0.9%, 13.3%)	1.31 (0.92, 1.86); 0.134	6.5% (1.2%, 14.2%)	Not estimated***	Not estimated**	Not estimated***	Not estimated**	1.22 (0.85, 1.77); 0.283	4.9% (-0.5%, 13.6%)

*Models are adjusted for poverty probability index score, marital status, nulliparity, and insurance at delivery.

**Imputation models included poverty probability index score, marital status, nulliparity, and insurance at delivery, maternal age, sub-county, occupation, all the outcomes, a random intercept for cluster and were run 10 times.

***Not included in imputation as this variable was restricted to those who had current use of family planning

Table S5: Sensitivity analyses of infant immunization outcomes

	Adjusted odds ratio (95% CI)*	Risk difference (95% CI)	p-value	E-value lower bound**	E-value point estimate**
Infants who received OPV 0 within 2 weeks of birth	1.09 (0.77, 1.53)	1.7% (-3.6%, 7.3%)	0.64	-	-
Infants who received Measles 1 by 12 months of age	2.88 (1.58, 5.26)	14.1% (9.1%, 19.6%)	< 0.001	1.25	1.69
Fully-immunized infants (≤12 months) per WHO standards	3.73 (1.90, 7.32)	0.163 (12.6%, 21.8%)	< 0.001	1.37	1.93
Fully-immunized infants (≤12 months) per Republic of Kenya MOH standards	3.39 (1.77, 6.47)	16.0% (11.2%, 21.1%)	< 0.001	1.33	1.84

* Results are adjusted for poverty probability index score, maternal education, and insurance at time of delivery.

** E-value represents amount of unmeasured confounding needed to explain away the observed effect size (either point estimate or lower confidence bound). Only estimated when result is statically significant.

Table S6: Complete cluster outcome primary outcome rates

Control		Intervention	
Cluster	Outcome rate	Cluster	Outcome rate
Birbiriet (n = 21)	17 (80.95%)	Bikeke (n = 31)	29 (93.55%)
Birunda (n = 31)	18 (60%)	Chematch (n = 25)	20 (83.33%)

Bonden (n = 15)	10 (66.67%)	Ekegoro (n = 3)	1 (33.33%)
Chisare (n = 4)	3 (75%)	Geta (n = 22)	22 (100%)
Gatua (n = 18)	18 (100%)	Gitwamba (n = 34)	26 (76.47%)
Grassland (n = 31)	28 (96.55%)	Hututu (n = 26)	23 (92.30%)
Kaisagat (n = 17)	13 (76.47%)	Kabolet (n = 15)	14 (93.33%)
Kananachi (n = 27)	21 (84%)	Kabuyefwe (n = 30)	16 (53.33%)
Kapkarwa (n = 9)	7 (77.78%)	Kahuho (n = 24)	23 (95.83%)
Kaplamai (n = 31)	25 (80.65%)	Kapkoi A (n = 50)	39 (79.59%)
Kapomboi (n = 15)	7 (46.67%)	Kapkoi B (n = 15)	10 (83.33%)
Kapterit (n = 10)	7 (70%)	Kapretwa (n = 24)	17 (73.91%)
Kaptumbo (n = 16)	13 (81.25%)	Kesogon (n = 18)	14 (82.35%)
Karaus (n = 5)	5 (100%)	Kimaran (n = 24)	13 (54.17%)
Kdh (n = 41)	38 (95%)	Kiptoi (n = 21)	21 (100%)
Keiyo (n = 9)	6 (66.67%)	Kiriita (n = 28)	26 (92.86%)
Kipkeikei (n = 16)	14 (87.5%)	Kobos Sabwani (n = 11)	8 (72.73%)
Kipsigilai (n = 20)	13 (65%)	Koykoy (n = 28)	20 (71.42%)
Kolongolo A (n = 15)	13 (86.67%)	Kwanza (n = 26)	24 (92.31%)
Kolongolo B (n = 12)	9 (81.82%)	Lunyu (n = 18)	17 (94.44%)
Lyavo (n = 35)	20 (58.82%)	Maridadi (n = 32)	19 (63.33%)
Machungwa (n = 7)	6 (85.71%)	Matisi (n = 12)	9 (75%)
Marambach (n = 20)	12 (60%)	Matisi Corner (n = 27)	24 (90.00%)
Matunda (n = 12)	6 (60%)	Milimani (n = 19)	15 (78.95%)
Michai (n = 12)	11 (91.67%)	Mitambo (n = 23)	22 (95.65%)
Motosiet (n = 25)	22 (88%)	Mitume (n = 26)	20 (86.96%)
Muroki (n = 25)	11 (52.38%)	Munasa (n = 27)	25 (96.15%)
Muthangare (n = 9)	7 (77.78%)	Mutua (n = 18)	9 (64.29%)
Mwitho (n = 45)	29 (64.44%)	Ngonyek (n = 6)	6 (100%)
Nairobi (n = 11)	8 (72.73%)	Nyabomo (n = 19)	16 (88.89%)
Namanjalala 1 (n = 58)	25 (47.17%)	Nyasi (n = 12)	11 (91.67%)
Namanjalala 2 (n = 27)	10 (40%)	Nzoia (n = 13)	12 (92.31%)
Noigam (n = 30)	25 (92.59%)	Olkesem (n = 16)	6 (46.15%)
Rafiki (n = 17)	9 (52.94%)	Sarura (n = 22)	16 (72.73%)
Sibanga (n = 7)	5 (71.43%)	Sukura (n = 38)	22 (59.46%)
Wesakulila (n = 8)	6 (75%)	Tunen (n = 15)	12 (80%)
Wiyeta (n = 17)	17 (100%)	Wehoya (n = 24)	19 (79.17%)