Evaluating the Effectiveness of a Nutrition-Sensitive Agriculture Intervention in Western Kenya:

Design and Preliminary Findings of the Mama SASHA project

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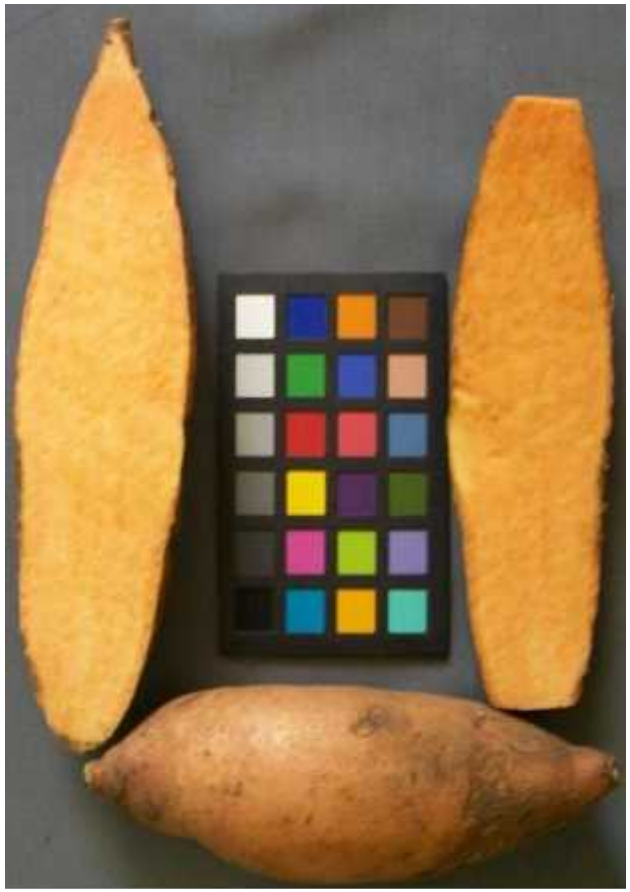
Markets, Processing, and Utilization Community of Practice platform on 20-21 May 2015 in Nairobi, Kenya.

Linking Agriculture & Nutrition to Health: the search for alternative effective delivery systems

- 5 year study in Western Kenya (2009)
- Can linking OFSP access and nutritional training to existing health services provide:
  - an incentive to pregnant women to increase health service utilization?
  - increases in consumption of OFSP and other vitamin A rich foods by the women and their young infants in a cost-effective manner?
- Partners: CIP in collaboration with PATH (International Health NGO), Univ. of Toronto, Emory Univ., CREADIS & ARDAP (2 Local Agricultural NGOs), MoA & MoH

The Orange-fleshed, pro-vitamin A rich sweetpotato is a nutrition superfood!



Very rich in pro-vitamin A
1 small root (100g) meets the daily vitamin A needs of a young child

Also has good levels of vitamins C, E, K, several B vitamins, manganese, potassium & dietary fiber

Mama SASHA Project : testing linking OFSP to health services for pregnant women for Increased impact on nutrition in Western Kenya

1. COMMUNITY SENSITISATION

2. ANC CLINIC ATTENDANCE/ NUTRITIONAL COUNSELING

3. VOUCHER ISSUING AT ANC CLINIC

6. AG EXTENSION ACTIVITIES

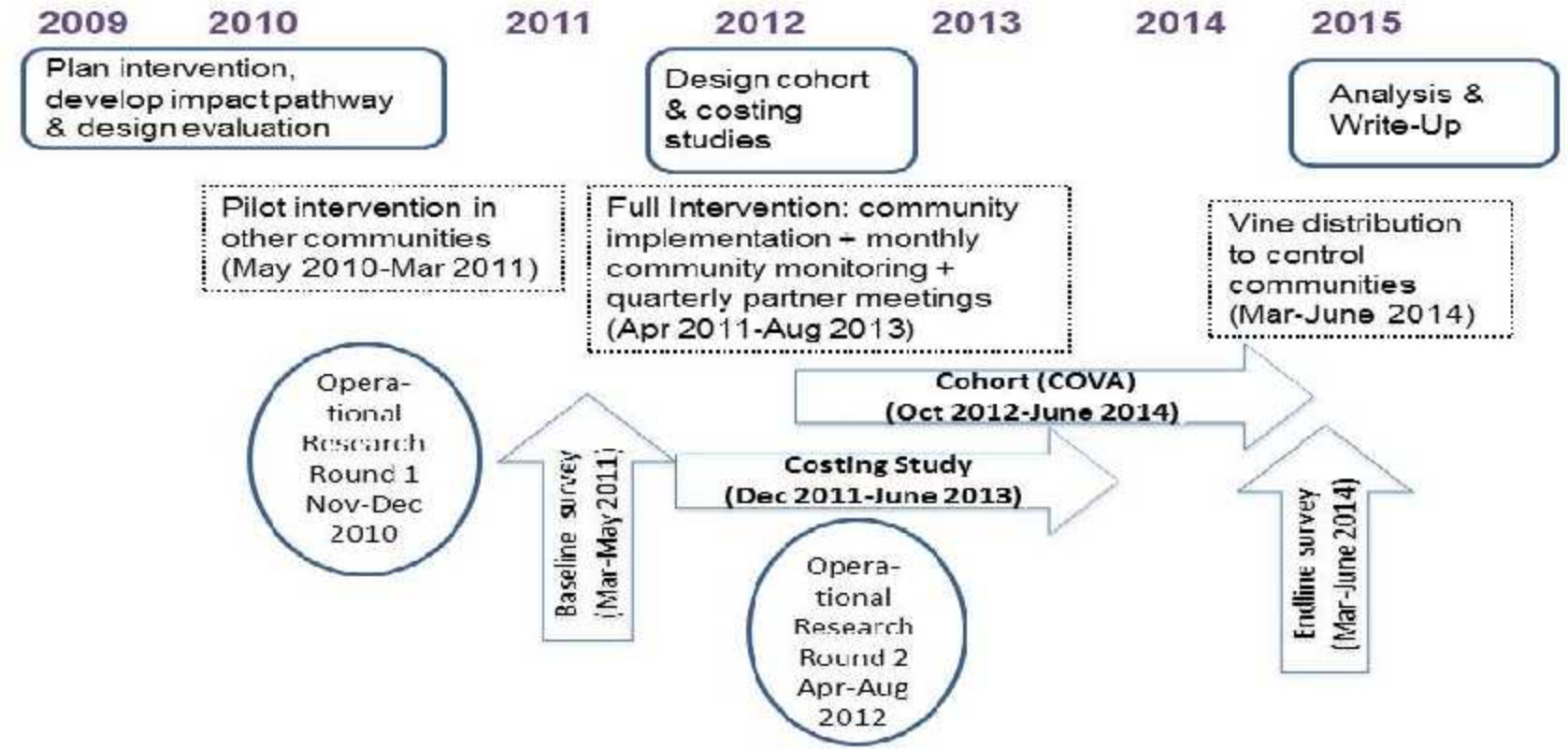
5. PREGNANT MOTHER'S CLUBS

4. VOUCHER REDEMPTION

EVALUATION STRATEGY

1. Cluster randomized at facility level
   - 4 intervention and 4 comparison facilities across Bungoma and Busia counties
2. Cross sectional baseline and endline surveys (n>2000 / round)
   - Objective: Assess population level impact on child nutrition
   - Design: 2 stage cluster randomized surveys in catchment areas of intervention and control facilities; Mar-May 2011 and Mar-May2014
   - Detailed costing data for cost-effectiveness analysis – Abstracts
3. Nested Cohort Study (COVA)
   - Assess individual level impacts on maternal and child nutrition
   - Design: Longitudinal study of 505 women enrolled in pregnancy and followed to 9 months postpartum; Nov 2012-July 2014

Timeline for major implementation and research activities under Mama SASHA



PROJECT REACH (Implementation from March 2011 to August 2013

- *14 DVMs established*
  - *4 intervention sites*
- *Over 4,600 women reached*
- *7,159 voucher pairs issued*
- *4,464 redeemed (63%)*
  - *3,281 women*
- *CHWs established and run 215 PMCs/LMCs*
  - *2,764 members*
  - *25,141 attendances*
  - *784 mothers participated monthly*
  - *254 newly recruited women monthly*

PRELIMINARY FINDINGS: Endline

	Catchment Areas at Endline			Extent of Participation in Intervention Areas			
	Intervention	Control	p-value	None	Partial	Full	p-value
Sample size	1164	1109		524	393	220	
Percent growing OFSP	49.5%	3.7%	0.0000	22.4%	66.4%	91.7%	0.0000
Frequency of Intake of OFSP (days/week) during hunger period; Mean (SD)	0.8 (1.5)	0.1 (0.8)	<0.0001	0.4 (1.1)	1.0 (1.5)	1.9 (2.0)	<.0001
Frequency of Intake of OFSP (≥3days/week) during hunger period; %	14.3%	2.3%	<0.0001	6.5%	16.2%	33.8%	<.0001
Frequency of VA Intake Score; Mean (SD)	2.4 (2.2)	2.3 (2.0)	0.1185	2.3 (2.1)	2.3 (2.0)	3.0 (2.6)	<.0001
Frequency of VA Intake Score,% >6 (adequate consumption);	7.1%	5.1%	0.0400	6.5%	5.1%	11.6%	.0080

Finding 1: *Production of & frequency of intake of OFSP and dietary VA were significantly greater among intervention & full participation groups at endline*

PRELIMINARY FINDINGS: Endline

	Catchment Areas at Endline			Extent of Participation in Intervention Areas			
	Intervention	Control	p-value	None	Partial	Full	p-value
Sample size	1164	1109		524	393	220	
Nutritional Knowledge Score (max = 24); Mean (SD)	10.0 (3.5)	9. 6 (3.3)	0.04	9.7 (3.4)	10.1 (3.3)	11.1 (3.9)	0.027
Knowledge of Current Child Care Practices (max= 25); Mean (SD)	15.5 (3.4)	14.9 (3.3)	<0.0001	14.6 (3.6)	15.8 (3.0)	17.1 (3.1)	<0.0001
Attitude Score (max= 20); Mean (SD)	13.3 (3.2)	13.0 (3.3)	0.056	13.0 (3.1)	13.1 (3.4)	14.2 (2.9)	<0.0001
For previous pregnancy: Number of times received ante-natal care; Mean (SD)	4.5 (1.6)	4.4 (1.7)	0.211	4.2 (1.7)	4.6 (1.6)	4.7 (1.6)	0.0002
For previous pregnancy: Months pregnant at time of 1st visit; Mean (SD)	3.8 (1.6)	4.0 (1.5)	0.005	4.0 (1.6)	3.9 (1.5)	3.4 (1.4)	<0.0001

Finding 2: Percent HH consuming OFSP; Maternal nutrition, health and childcare knowledge and early ANC attendance were significantly higher in the intervention & full participating groups at endline

PRELIMINARY FINDINGS: Endline

	Catchment Areas at Endline			Extent of Participation in Intervention Areas			
	Intervention	Control	p-value	None	Partial	Full	p-value
Sample size	1160	1105		515	405	233	
Stunting (Height for Age (HAZ)), Mean (SD)	-0.77 (1.44)	-0.96 (1.50)	0.002	-0.74 (1.47)	-0.79 (1.42)	-0.78 (1.40)	0.86
Stunting (<-2 HAZ), %	18.3%	24.1%	0.0008	18.4%	19.3%	15.0%	0.38
Underweight (Weight for age (WAZ)), Mean (SD)	-0.28 (1.20)	-0.43 (1.21)	0.004	0.19 (1.06)	0.24 (1.07)	0.20 (1.11)	0.85
Underweight (<-2 WAZ) %	7.1%	10.3%	0.0070	7.8%	6.4%	6.9%	0.71

Finding 3: There were significant differences indicating better status for children in intervention than in control areas for stunting and underweight, however these were not confirmed by extent of participation figures in the intervention

PRELIMINARY FINDINGS: Endline

	Catchment Areas at Endline			Extent of Participation in Intervention Areas			
	Intervention	Control	p-value	None	Partial	Full	p-value
Sample size	926	874		417	318	191	
RRB, Mean, (95% CI)	1.58 (1.53, 1.62)	1.59 (1.54, 1.64)	0.72	1.48 (0.94, 2.09)	1.63 (1.15, 2.29)	1.70 (1.21, 2.36)	0.001
VAD (RBP <0.825 µmol/L), %*	18.8	23.7	0.013	23.0	14.8	16.2	0.012

*RBP <0.825 µmol/L which is biologically equivalent to 0.7 µmol/L of retinol; values have been adjusted for the influence of subclinical inflammation (CRP > 5*mg/L*).

Values available for VAD were: Intervention (n=926) and control (874).

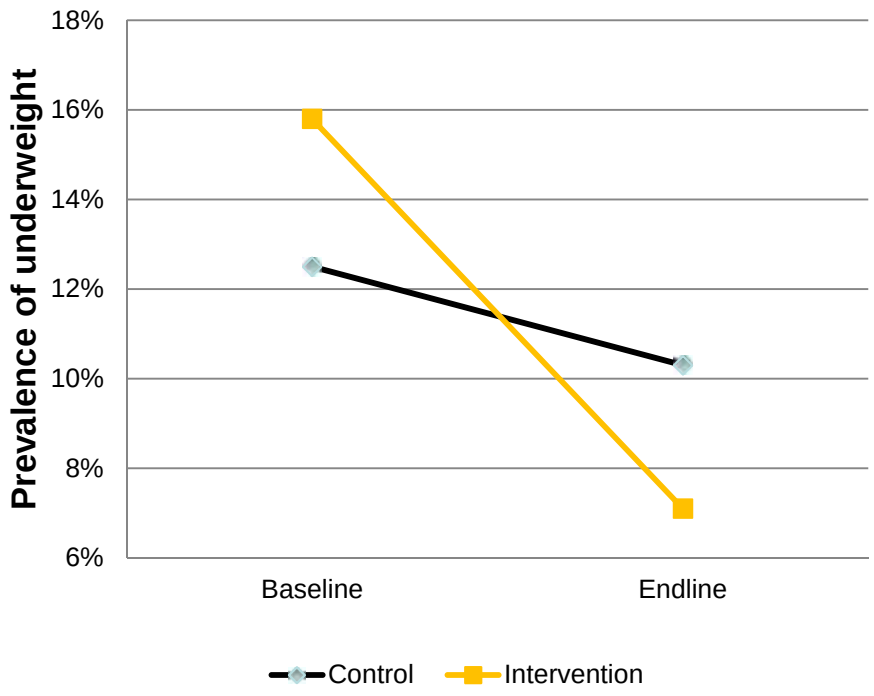
Values available for CRP were: Intervention (n=1135) and control (1077).

DBS analyzed for RBP at KEMRI/CDC, Kisumu, Kenya. Quality control done at CSDE Biodemography Lab, Univ. of Washington, Seattle, WA.

Finding 4: The prevalence of inflammation adjusted VAD (i.e. RBP <0.83umol/L) was significantly lower in intervention & participating groups at endline

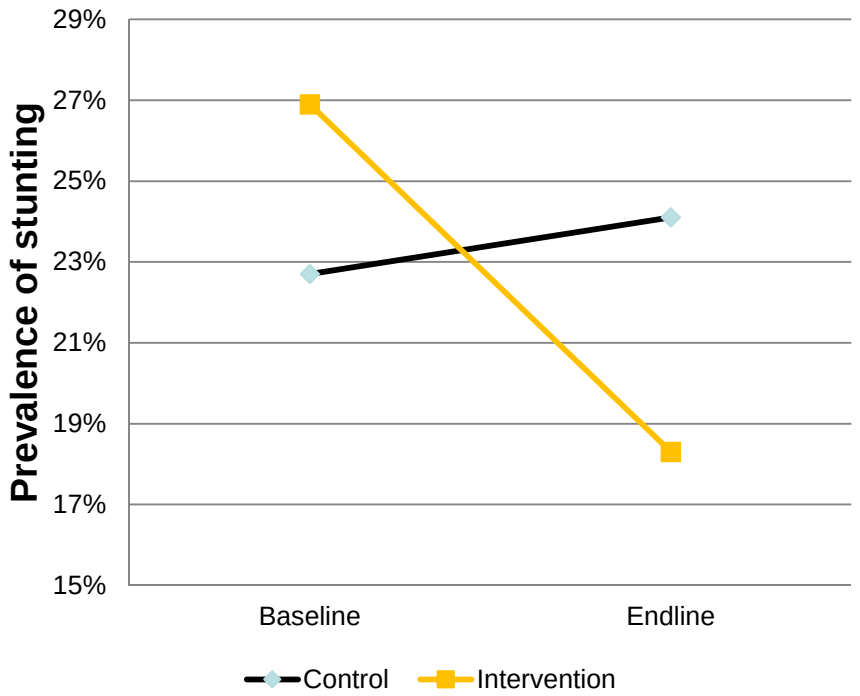
PRELIMINARY FINDINGS: Impact

Figure 1: Change in prevalence of underweight among children 6-23 mo of age from baseline to endline[1]



Impact estimate = -6.5%**

Figure 2: Change in prevalence of stunting among children 6-23 mo of age from baseline to endline[1]

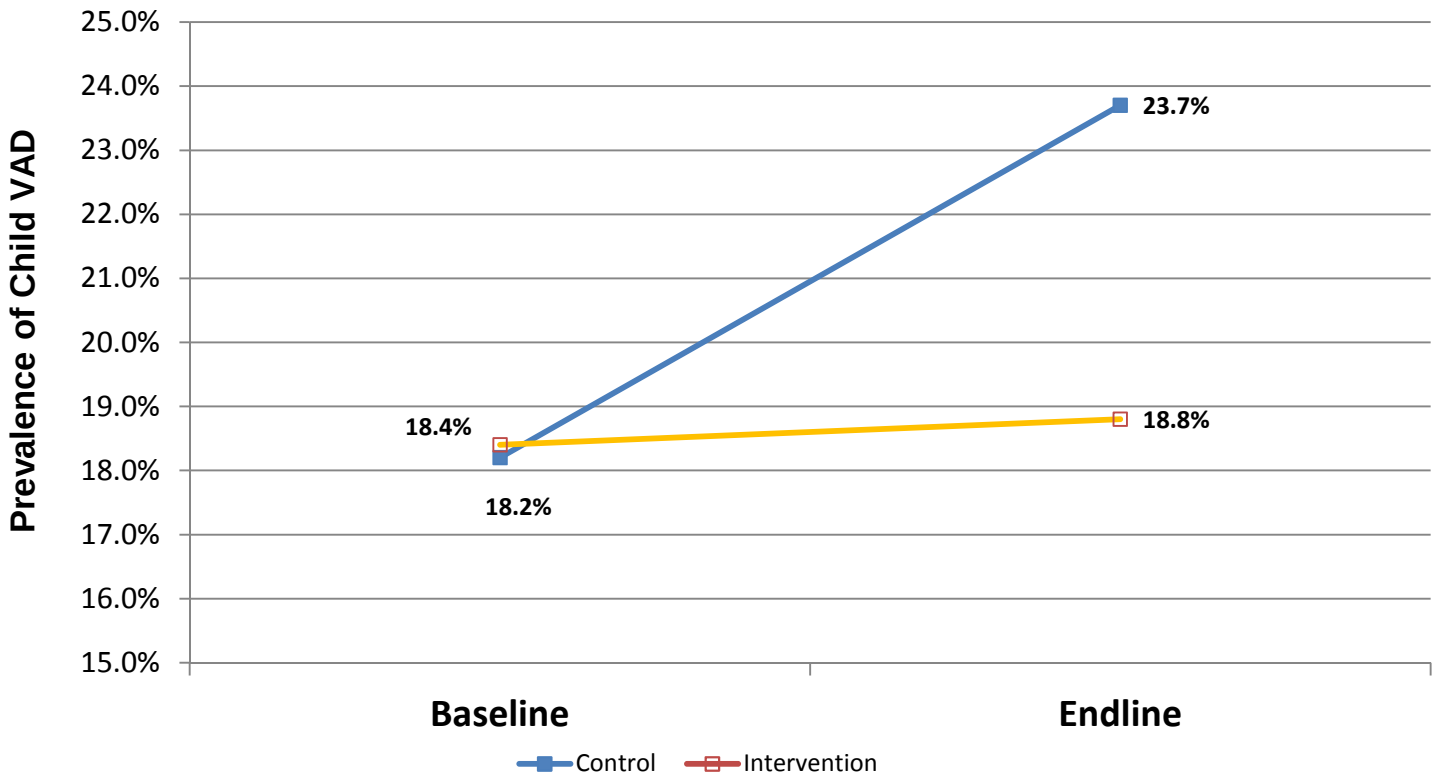


Impact estimate = -10%**

[1]Difference-in-difference (DID) impact estimates between control & intervention groups controlled for child sex, clustering. Data from baseline and endline surveys ** p<0.05 for DID estimates.

PRELIMINARY FINDINGS: Outcome

Figure 3: Change in prevalence of VAD among children 6-23 mo of age from baseline to endline[1]



Impact estimate = -5.1%**

[1]Difference-in-difference (DID) impact estimates between control & intervention groups controlled for child sex, clustering. Data from baseline and endline surveys ** p=0.04 for DID estimates.

Preliminary findings indicate that integrated ag-nutrition-health interventions are worth considering!

- **Cohort study (**early pregnancy till 9mo postpartum**)**
  - Intakes of vitamin A significantly higher among both mothers & children in the intervention group at 8-10 months postpartum; Differences in VA intakes were attributed to OFSP consumption
- **Cost analysis (**financial costs of integrated Mama SASHA project**)**
  - Over 5,400 women participated in monthly pregnant mother clubs at a cost of $63 per woman
    - There were 18,730 contact points (in 3 years) at a cost of $30 per contact
  - Of 4,629 women who received vouchers, 3,281 women redeemed vouchers and planted OFSP at a cost of $110 for woman and her infant
- **Cost-effectiveness (**Mama SASHA was cost effective**)**
  - $1882/DALY averted < WHO Threshold of 3 X GDP of country ($994 for Kenya)

Disability-Adjusted Life Year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death

LESSONS LEARNED

FROM MAMA SASHA PROJECT

What is essential on the agricultural side?

1) Varieties that produce as well as the best local *and* taste good
2) Access to quality planting material – a challenge in drought prone areas requiring a new technology– Triple S
3) Better knowledge of disease (virus) & pest (weevil) management

Breeding *in Africa for Africa*
46 of new varieties since 2009
Of which 37 are orange-fleshed

Triple S Method (SSS)
Storage in Sand & Sprouting

What investments are needed on the nutrition side?

1. Investment in community-level nutrition education

   Repetition of consistent messages alongside demonstrations in group based sessions for a year sufficient for OFSP uptake & incorporation into the young child diet

2. Men matter--- don't ignore them as they often control land access & also influence diet choices
3. Extension personnel need quality job aids
4. Save costs by using existing farmer or social groups as an entry point

Health Service integration

Lessons on integrating Agriculture and Nutrition into public health service delivery system

Lessons learned in fostering integration include:

1. Training community health workers/CHWs and healthcare workers/nurses on
    I. Instruction on OFSP agronomy
    II. Nature of OFSP planting cycle / season
    III. Good nutrition & counselling on vitamin A
    IV. Use of voucher (nurses)
2. Involvement of CHWs in counselling at ANC (busy schedule for nurses)
3. Provision of IEC counselling cards, posters (at HFs), leaflets (distributed at ANC)
4. Health workers and agriculture extentionists jointly trained on seed systems & nutrition
5. Feedback meetings of stakeholders from health and agriculture sectors

Thank you from the Mama SASHA Team

RESEARCH AND IMPLEMENTATION TEAM

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