



Is Women's Empowerment a Pathway to Improving Child Health Outcomes in an Integrated Agriculture and Nutrition Program?

Evidence from a Randomized Controlled Trial in Burkina Faso

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Background

- Women's empowerment is associated with better child health (Shroff et al. 2009).
- Maternal and child health programs often emphasize the role of women in determining children's access to food, health, and care.
- Aim to empower women to make decisions that benefit their own wellbeing and that of their children.
- Varied definitions of women's empowerment, and conclusions are based primarily on cross-sectional data (Cunningham et al. 2014).



Women's empowerment

- Ability to make strategic choices and exercise agency (Kabeer 2005).
- Multidimensional (Alkire 2005; Kishor & Subaiya 2008).
- Both intrinsic and utilitarian value.
- May link increased resources and knowledge to the adoption of optimal childcare practices and improved nutritional status among children (Shroff et al. 2009).



Enhanced Homestead Food Production

- Integrated agriculture, nutrition, and health intervention
- Designed and implemented by Helen Keller International in Fada N’Gourma, Burkina Faso
- Targeted mothers of children aged 3 to 12 months
- Primary program interventions
 - Agriculture supplies (e.g. seeds, saplings, small animals, gardening tools)
 - Agriculture training by a female village farm leader
 - Nutrition and health related trainings provided by either Older Women Leaders (OWL) or Health Committee (HC) members





Program objectives

Primary objectives:

- Improve maternal and child health and nutrition

Pathways to improved nutrition:

- Increase maternal and child intake of micronutrient-rich foods through women's increased production of these foods
- Increase income and women's control over income through sale of surplus production
- Increase adoption of optimal health and nutrition practices by increasing knowledge and encouraging their adoption

Intermediary objectives to empower women:

- Increase ownership and control of agricultural assets
- Increase production and control of micronutrient-rich foods
- Improve knowledge of optimal practices in agriculture, health, hygiene, and nutrition
- Increase decision-making power via ownership and control over assets and micronutrient-rich foods and increased knowledge
- Increase social capital through participation in E-HFP program



Study design

- Impact evaluation
 - Cluster-randomized controlled trial
 - 25 control villages (N=741 households)
 - 15 OWL treatment villages (N=514 households)
 - 15 HC treatment villages (N=512 households)
 - Longitudinal design
 - Baseline February-May 2010 (target children 3-12 months)
 - Endline February-June 2012 (target children 27-36 months)
 - Household survey
 - Socio-demographic characteristics
 - Child anthropometry
 - 30 questions related to women's empowerment



Women's empowerment indicators

Component	Questions included	Response codes	Range	alpha T1, T2
Purchasing decisions	Can you make the decision to purchase the following items?	no=0; yes=1	0 to 8	0.89, 0.90
	1. Small quantities of food, such as rice, vegetables, and bean			
	2. Larger quantities of food, such as bags of rice			
	3. Clothing for yourself			
	4. Medication for yourself			
	5. Toiletries such as soap and toothpaste			
	6. Medication for children?			
	7. Special foods for your children			
	8. Can you decide how to spend your money			
Healthcare decisions	Which household members decide most often about the following issues?	Woman contributes:	0 to 2	0.57, 0.77
	1. Consult a doctor or go to a clinic when you are pregnant	no=0; yes=1		
	2. What to do when a child is sick			
Family planning decisions	Which household members decide most often about the following issues?	Woman contributes:	0 to 2	0.66, 0.64
	1. Use a contraceptive method	no=0; yes=1		
	2. Have another child			
Spousal communication	How often do you speak to your spouse about...	never=0;	0 to 14	0.86, 0.95
	1. Your professional/agricultural activities	sometimes=1;		
	2. Your domestic activities	often= 2		
	3. Your expenses			
	4. Events in your community			
	5. The health of your child			
	6. Your child's food			
	7. Your health			



Related findings from this evaluation

- Reduced prevalence of anemia, wasting, and diarrhea among children (Olney *et al.* 2015)
- Reduced prevalence of thinness among women; increased women's empowerment (Olney *et al.* 2016)
- Increase in women's ownership and control of agricultural assets and small animals; improved perceptions of women's ability to manage land and participate in agricultural production (van den Bold *et al.* 2015)





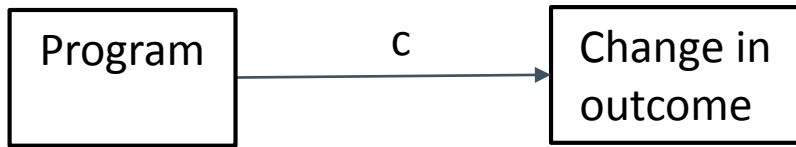
Methods: overall approach

- Are improvements in women's empowerment a pathway by which the intervention had an impact on wasting?
- Causal mediation with structural equation models
 - Analytic sample limited to those with a spouse present at both waves
 - N=1,035
 - Full information maximum likelihood to limit bias from missing data
 - Estimates of indirect effects use bootstrapped standard errors to account for violation of multivariate normality



Program pathways

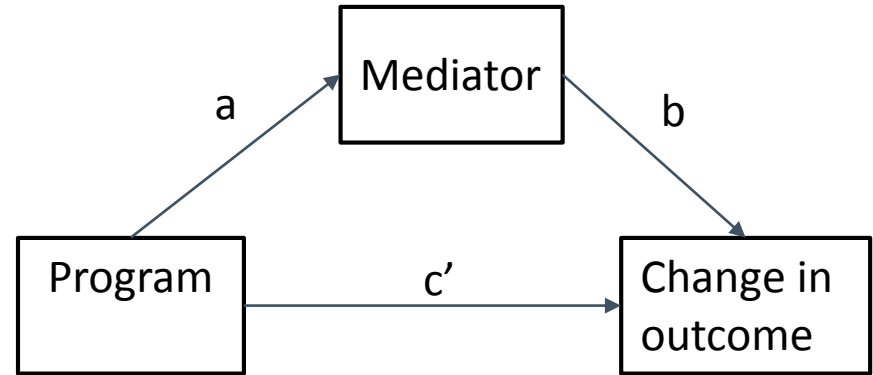
Program impact without mediation



Total effect = c

c = effect of the program on outcome

Program impact with mediation



Indirect effect = $a \times b$

Direct and excluded indirect effect = c'

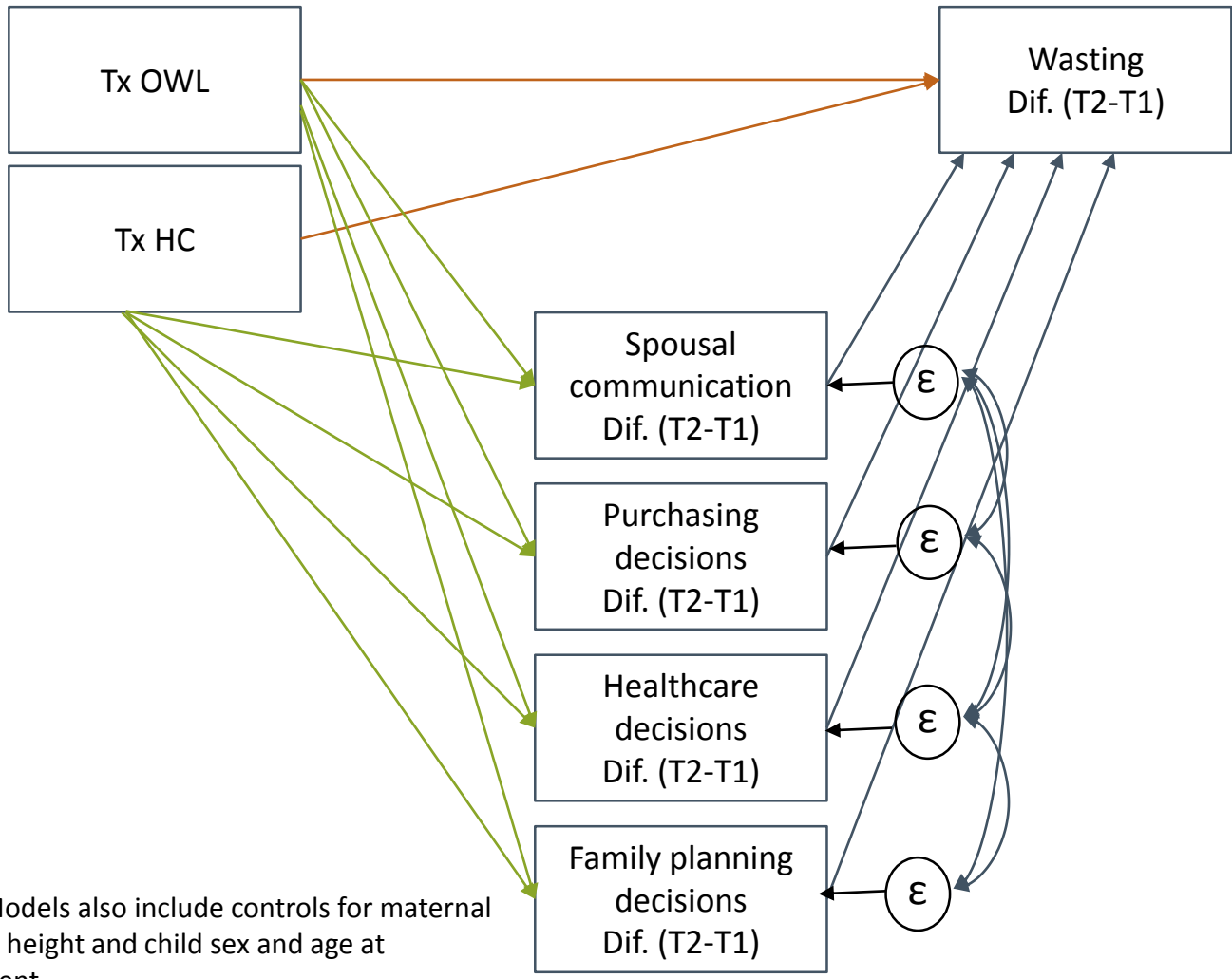
Total effect = Direct + Indirect = c

a = effect of the program on the mediator

b = effect of the mediator on outcome
(controlling for program)

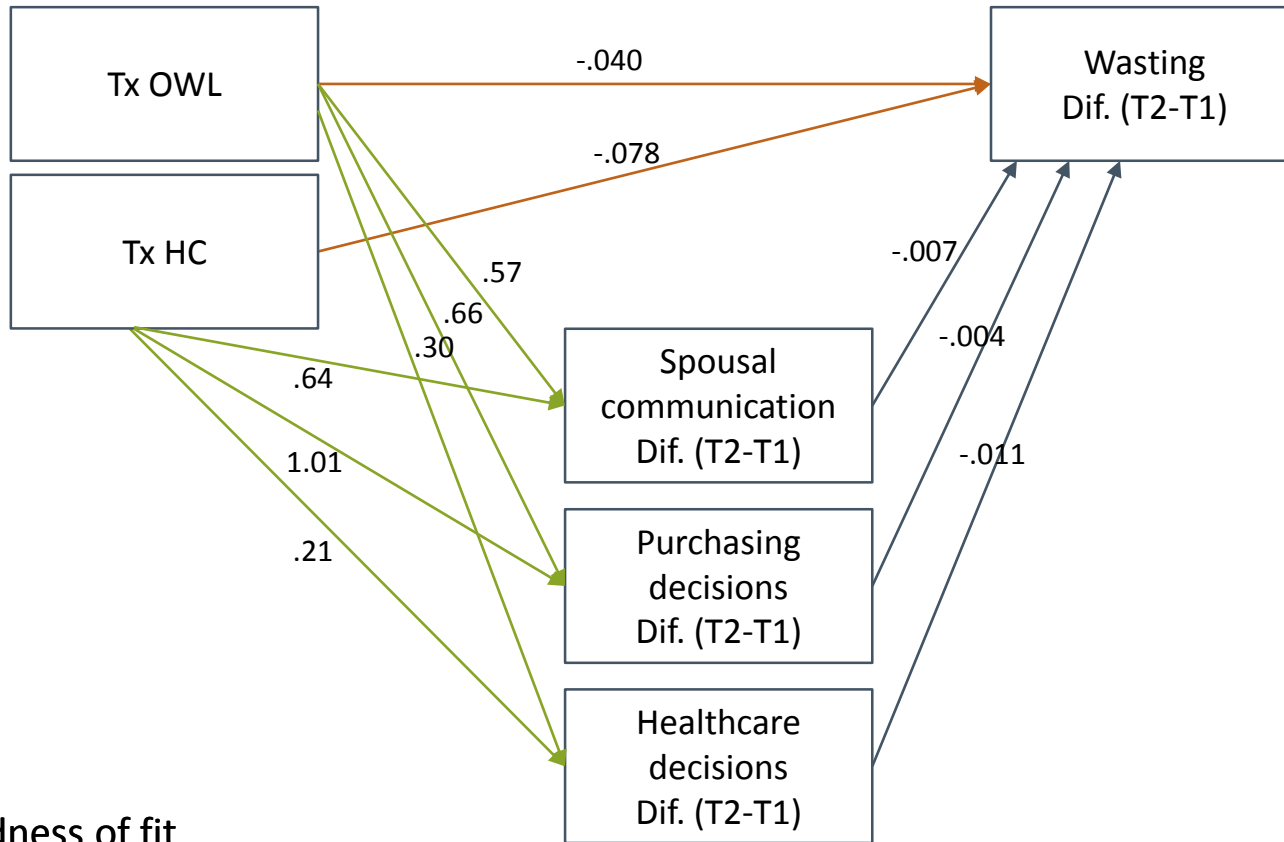
c' = effect of the program on outcome
(controlling for mediator)

Hypothesized model



Note: Models also include controls for maternal age and height and child sex and age at enrollment.

Based on Preacher and Hayes 2008; Hayes and Preacher 2014



Goodness of fit

RMSEA = 0.000

CFI=1.000

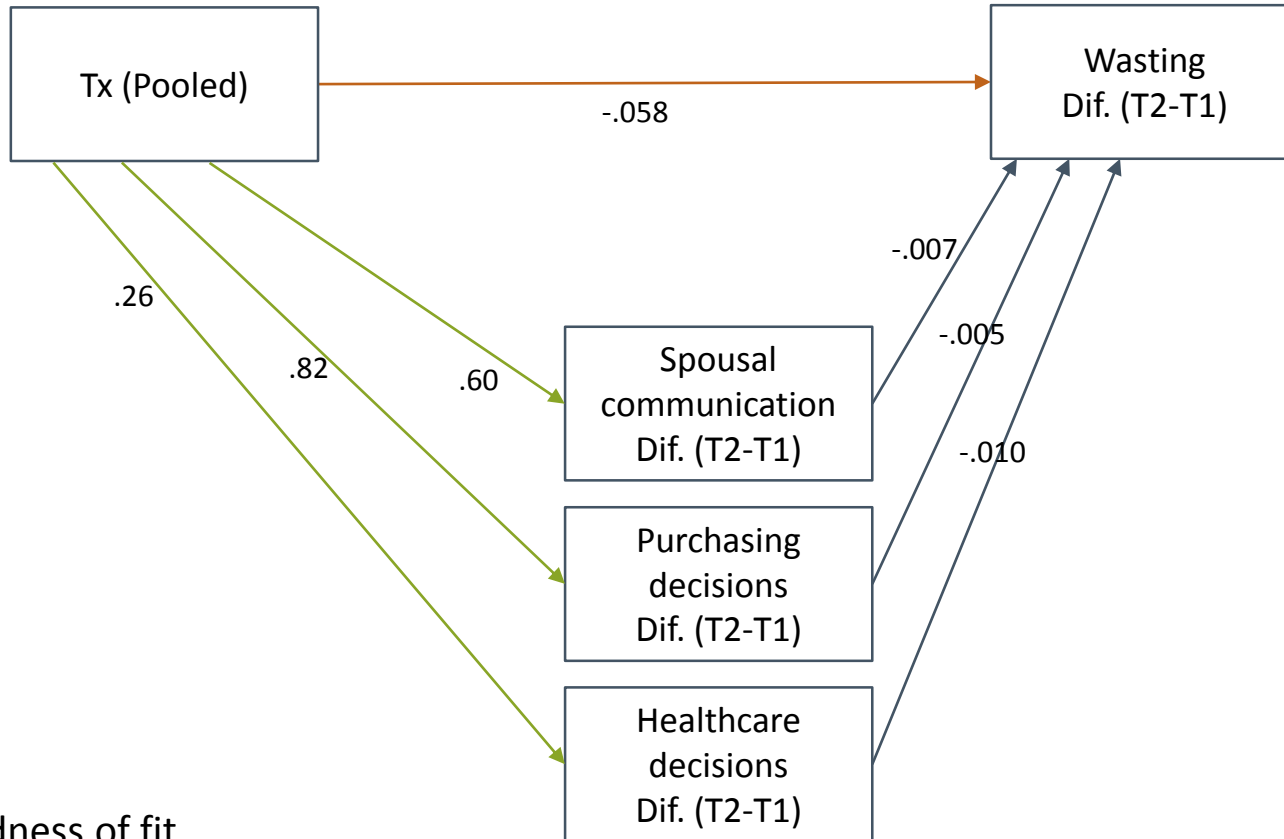
$\chi^2(3)=1.56$

Note: Correlated errors among 3 putative mediators are included, but not depicted. Models also include controls for maternal age and height and child sex and age at enrollment. Standard errors are bootstrapped to account for violation of multivariate normality in indirect effects.

Direct and indirect effects of EHFP program on child wasting: mediation via women's empowerment

	OWL	HC
Total effects	-0.050 (.042)	-0.089 ** (.042)
Direct and excluded indirect effects	-0.040 (.042)	-0.078 * (.042)
Effects via women's empowerment (indirect)	-0.010 (.007)	-0.011 * (.007)

Note: **p < .05; * p < .10



Goodness of fit

RMSEA = 0.000

CFI=1.000

$\chi^2(3)=1.59$

Note: Correlated errors among 3 putative mediators are included, but not shown. Models also include controls for maternal age and height and child sex and age at enrollment. Standard errors are bootstrapped to account for violation of multivariate normality in indirect effects.

Direct and indirect effects of EHFP program on child wasting: mediation via women's empowerment

	<u>Combined Treatment Groups</u>
Total effects	-.069 ** (.035)
Direct and excluded indirect effects	-.058 * (.035)
Indirect effects via women's empowerment	-.011 * (.007)

Note: **p < .05; * p<.10



Conclusions

- Evidence that EHFP program's impact on reducing wasting is partially mediated by women's empowerment.
- Empowering women may help them leverage resources to implement optimal nutrition and health practices.
- Empowering women may have utilitarian value in the context of integrated agriculture and nutrition programs.



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Sample characteristics

	Control	OWL	HC
n=	425	319	291
Maternal age at baseline (years)	28.7	28.1	28.2
Child characteristics			
Age at baseline (months)	7.4	7.2	7.3
Boys	52.5	49.8	49.1
Wasted (%)			
Baseline	24.4	24.7	30.0
Follow-up	10.7	8.2	8.4
Small animal ownership (#)			
Baseline	5.7	5.2	5.1
Follow-up	7.2	9.5	7.9
Ag assets ownership (#)			
Baseline	34.2	30.4	31.1
Follow-up	35.9	36.9	33.8
Spousal communication (0-14)			
Baseline	10.8	11.3	10.9
Follow-up	9.4	10.5	10.2
Purchasing decisions (0-8)			
Baseline	5.4	4.8	5.3
Follow-up	4.9	5.0	5.8
Healthcare decisions (0-2)			
Baseline	1.4	1.1	1.2
Follow-up	1.0	1.0	1.1
Family planning decisions (0-2)			
Baseline	1.2	1.0	1.3
Follow-up	.9	.8	1.0