IFPRI Discussion Paper 01930

May 2020

Women's Empowerment in Agriculture and Nutritional Outcomes

Evidence from Six Countries in Africa and Asia

Agnes R. Quisumbing

Kathryn Sproule

Elena M. Martinez

Hazel Malapit

Poverty, Health, and Nutrition Division

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI), a CGIAR Research Center established in 1975, provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition. IFPRI's strategic research aims to foster a climate-resilient and sustainable food supply; promote healthy diets and nutrition for all; build inclusive and efficient markets, trade systems, and food industries; transform agricultural and rural economies; and strengthen institutions and governance. Gender is integrated in all the Institute's work. Partnerships, communications, capacity strengthening, and data and knowledge management are essential components to translate IFPRI's research from action to impact. The Institute's regional and country programs play a critical role in responding to demand for food policy research and in delivering holistic support for country-led development. IFPRI collaborates with partners around the world.

AUTHORS

Agnes R. Quisumbing (a.quisumbingl@cgiar.org) is a Senior Research Fellow in the Poverty, Health, and Nutrition Division of the International Food Policy Research Institute (IFPRI), Washington DC.

Kathryn Sproule (sproule.katie@gmail.com) is a Researcher and Founder at Sproule Research Group, Idyllwild, CA.

Elena M. Martinez (elena.martinez@tufts.edu) was a Research Analyst in IFPRI's Agriculture for Nutrition and Health Program (A4NH), Washington DC, when she wrote this paper. She is currently a doctoral student at the Friedman School of Nutrition Science and Policy at Tufts University, Boston, MA.

Hazel Malapit (h.malapit@cgiar.org) is a Senior Research Coordinator in IFPRI's Poverty, Health, and Nutrition Division, Washington DC.

***** *Corresponding author: Agnes Quisumbing*

Table of Contents

Abstract

Although women's empowerment and gender equality are associated with better maternal and child nutrition outcomes, recent systematic reviews find inconclusive evidence. This paper applies a comparable methodology to data on the Women's Empowerment in Agriculture Index (WEAI), a recent internationally-validated measure based on interviews of women and men within the same household, from six countries in Africa and Asia to identify which dimensions of women's empowerment are related to household-, women-, and child-level dietary and nutrition outcomes. We examine the relationship between women's empowerment and household-level food security and dietary diversity; women's dietary diversity and BMI; and child-related outcomes, controlling for woman, child, and household characteristics. We also test whether women's empowerment has differential associations for boys and girls. We do not find consistent associations between dimensions of empowerment and food security and nutrition outcomes across countries, but some patterns emerge. Overall empowerment scores are more strongly associated with nutritional outcomes in the South Asian countries in our sample compared to the African ones. Where significant, greater intrahousehold gender equality is associated with better nutritional outcomes. However, different domains have different associations with nutritional outcomes, suggesting that tradeoffs exist: higher workloads are associated with more diverse diets but lower women's BMI and child anthropometric outcomes. Identifying the overlap between the top contributors to disempowerment and those most strongly related to nutrition outcomes can inform the design and implementation of nutrition-sensitive agricultural programs.

Keywords: women's empowerment, gender, nutrition, agriculture.

Acknowledgements

This work was supported by the Food and Agriculture Organization of the United Nations and the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), with additional support from the Gender, Agriculture, and Assets Project, Phase 2 (GAAP2), supported by the Bill & Melinda Gates Foundation (BMGF) [Grant number: OPP1125297], the United States Agency for International Development (USAID) [Grant number: EEM-G-00-04-00013-00], and A4NH. We thank Sofie Lambert, Francesca Distefano, Andrea Polo Galante, Vanya Slavchevska, Ayurzana Puntsagdavaa, Erdgin Mane, and Diana Carter for comments on an earlier draft. The usual disclaimers apply.

1. Introduction

Women's empowerment and gender equality are intrinsically important; they also promote household food security and better women's and children's nutrition outcomes. Although a large body of empirical evidence documents the links between greater control of resources by women and improved child human capital outcomes (see reviews of observational studies (Quisumbing, 2003) and experimental studies (Yoong, Rabinovich, & Diepeveen, 2012)), a recent systematic review of the role of women's empowerment in child nutrition outcomes (Santoso et al., 2019), building on Carlson, Kordas, & Murray-Kolb (2015) Cunningham, Ruel, Ferguson, & Uauy (2015), and Pratley (2016) finds that the relationship between women's empowerment and child nutrition is inconclusive. Santoso et al. (2019) conclude that the limited evidence is likely not due to the absence of an underlying relationship between women's empowerment and child nutrition, but to flawed study design. These flaws involve the measurement and aggregation of quantitative indicators of women's empowerment, complexity in measuring a multidimensional concept, the situational, context-dependent nature of the empowerment process (Pratley, 2016); measurement of autonomy and the limitations of cross-cultural comparability (Carlson et al., 2015); and inadequate attention to time allocation, reproductive decisions, and indicators of men's engagement in women's empowerment and child nutrition (Santoso et al., 2019).

Conceptual and measurement issues have also stymied the testing of linkages between women's empowerment and her own nutritional outcomes. Conceptually, these linkages are complex and directions of impact between empowerment and nutrition outcomes are ambiguous. Some ambiguity stems from empowerment itself being affected by other factors, including a woman's age, education, status within the household and society, and knowledge, all of which also influence nutrition outcomes, directly or indirectly. Moreover, perceptions of empowerment are context-specific. Kabeer (1999) argues that women's empowerment indicators have to be sensitive both to the ways that context shapes processes of empowerment, and to whether women are empowered in the specific roles that they play in these particular contexts.

Relationships between women's empowerment and nutrition have attracted recent attention owing to the recognition that gender relations play an important role along the agriculture-nutrition pathways (Ruel & Alderman, 2013). Three of the six agriculture-nutrition pathways identified in a comprehensive review of nutrition-sensitive interventions focus specifically on women: *women's social status and empowerment* through increased access to and control over resources; *women's time* through participation in agriculture, which can be either positive or negative for their own and their children's nutrition; and *women's health and nutrition* through engagement in agriculture, which may have either positive or negative impacts, depending on exposure to toxic agents and the balance between energy intake and expenditure (Ruel & Alderman 2013).

Conceptual difficulties are compounded by the lack of cross-nationally comparable empowerment measures. The most widely available datasets, the Demographic and Health Surveys, focus on household decision-making and decisions in the reproductive, not the productive sphere (Alkire et al., 2013). The availability of a standardized measure of women's empowerment, the Women's Empowerment in Agriculture Index (WEAI), which has been collected in large-scale population-based surveys in 19 countries, provides an opportunity to examine how women's empowerment in the productive sphere in agricultural settings affects food and nutrition security in many contexts. Although relationships between the WEAI and nutrition outcomes have been analyzed in countries as diverse as Bangladesh (Malapit, Sraboni, Quisumbing, & Ahmed, 2019; Sraboni, Malapit, Quisumbing, & Ahmed, 2014; Sraboni & Quisumbing, 2018), Nepal (Malapit, Kadiyala, Quisumbing, Cunningham, & Tyagi, 2015), Ghana (Malapit & Quisumbing, 2015), and India (Gupta, Pingali, & Pinstrup-Andersen, 2019), these are single-country studies; relationships between women's empowerment and nutrition may differ across country contexts, making external validity a concern. Outside these countries, gaps exist in the evidence base for providing guidance to designers and implementors of nutrition-sensitive agricultural programs that also seek to improve gender equality.

This paper analyzes WEAI data from six countries in Africa and Asia to identify which indicators and dimensions of women's empowerment are related to dietary and nutrition outcomes of women,

children, and their households. To our knowledge, this is the first time that data on the WEAI and nutrition outcomes will be analyzed for multiple countries using a comparable methodology, making cross-country and cross-regional comparisons possible. We examine the relationship between women's empowerment and household-level food security and dietary diversity, women's dietary diversity and BMI; and child-related outcomes (exclusive breastfeeding, dietary diversity, and anthropometry), controlling for woman, child, and household characteristics. We also test whether women's empowerment has differential associations for boys and girls.

2. Empowerment and nutrition: Concepts and measures

2.1 Empowerment domains and nutrition linkages

Although linkages between increasing resources controlled by women and nutrition are well established, quantifying the linkages between women's *empowerment* and nutrition has been more difficult owing to the challenge of measuring empowerment. Because the concept of empowerment is so personal, each person has a unique definition of empowerment, based on his or her life experiences, personality, and aspirations. Context and culture also shape one's definition of empowerment. Unsurprisingly, many definitions of empowerment exist (Ibrahim & Alkire, 2007). Kabeer's (1999) definition, on which the WEAI is based, views empowerment as expanding people's ability to make strategic life choices, particularly in contexts in which this ability had been denied to them. In this definition, the ability to exercise choice encompasses three dimensions: resources (including not only access but also future claims to material, human, and social resources), agency (including processes of decision-making, negotiation, and even deception and manipulation), and achievements (well-being outcomes) (Kabeer, 1999). The WEAI focuses on agency, which is far less studied than resources (such as income) or achievements (such as educational levels), because it directly addresses the issue of choice or decision-making.

The WEAI also differs from measures of empowerment derived from nationally representative surveys such as some Demographic and Health Surveys, which are based on questions about household

decision-making that typically focus on the domestic sphere and do not encompass decisions in the productive and economic spheres. Neither do most surveys have identical questions for men and women (Alkire et al., 2013). Lastly, the WEAI captures control over resources or agency within the agricultural sector, an important source of livelihoods in developing countries that is not covered by most existing indices.

The core concept of the WEAI involves measuring women's empowerment in five domains in agriculture; assessing men's empowerment in the same domains gives a measure of the gender gap in empowerment. In this section we discuss how these domains are operationalized and how they may affect food security and nutrition outcomes.

2.2 Domains and indicators of empowerment in the WEAI

WEAI is an aggregate index reported at the country-, region-, or program-level and is composed of two sub-indices: the five domains of empowerment (5DE) and the gender parity index (GPI). The 5DE assesses women's empowerment in five domains, which include (i) agricultural **production** decisions, (ii) access to and decision-making power over productive **resources**, (iii) control over use of **income**, (iv) **leadership** roles within the community, and (v) **time** allocation. The 5DE is constructed from individual-level empowerment scores reflecting each person's achievements in the five domains as measured by 10 indicators with their corresponding weights (Table 1). Each indicator measures whether an individual has surpassed a given threshold, or has adequate achievement, with respect to each indicator. A woman is defined as empowered if she has adequate achievements in four out of the five domains or has achieved adequacy in 80 percent or more of the weighted indicators.

Table 1. Domains, indicators, and weights in the Women's Empowerment in Agriculture Index

Domain	Indicator	Definition of Indicator	Weight
1. Production	1.1 Input in productive decisions	Sole or joint decision-making over food and cash-crop farming, livestock, and fisheries	1/10
	1.2 Autonomy in production	The extent to which the respondent's motivation for decision-making about agricultural production reflects own values rather than a desire to please others or avoid harm	1/10
2. Resources	2.1 Ownership of assets	Sole or joint ownership of major household assets	1/15
	2.2 Purchase, sale, or transfer of assets	Whether respondent participates in decision to buy, sell, or transfer assets	1/15
	2.3 Access to and decisions about credit	Access to and participation in decision-making concerning credit	1/15
3. Income	3.1 Control over use of income	Sole or joint control over income and expenditures	1/5
4. Leadership	4.1 Group member	Whether respondent is an active member in at least one economic or social group	1/10
	4.2 Speaking in public	Whether the respondent is comfortable speaking in public concerning issues relevant to oneself or one's community	1/10
5. Time	5.1 Workload	Allocation of time to productive and domestic tasks	1/10
	5.2 Leisure	Satisfaction with time for leisure activities	1/10

Source: (Alkire et al., 2013)

Unlike other women's empowerment measures based on women-only interviews, WEAI uses survey data from the self-identified primary male and female adult decision-makers in the same household. Relative empowerment is captured in GPI, which reflects women's achievements in the five domains relative to the men in their households. Households are classified as having gender parity if either the woman is empowered (her empowerment score is 80 percent or higher) or her score is greater than or equal to the empowerment score of the male decision-maker in her household.

Like the WEAI, the 5DE and GPI are reported as aggregate indexes. The values of these indices range from 0 to 1, where higher values reflect greater empowerment. The overall WEAI is a weighted average of 5DE and GPI, with weights 0.9 and 0.1, respectively. While the overall WEAI is a useful headline indicator, similar to the use of poverty indices to track overall poverty trends, the WEAI is also decomposable, allowing us to disaggregate the 5DE achievements by domain and by indicator to identify the specific areas contributing the most to both women's and men's disempowerment. The 10 individual indicators that compose the 5DE, however, are better suited to detailed analyses because they have more variability for assessing the relationship between dimensions of empowerment and different nutritional outcomes. Thus, for our household- and individual-level analysis, we use the aggregate women's empowerment score, based on the five domains of empowerment in agriculture, ten individual indicators on which the 5DE is based, and the gender gap in empowerment or the difference between the empowerment scores of the primary male and female decision-makers. We call the gender gap in empowerment at the household level the intrahousehold inequality score (IIS); this differs from the GPI, which is an aggregate (country- or region-level) score. Table 2 presents definitions of the empowerment indicators and the nutritional outcome indicators at the household, woman, and child levels used in this study.

Table 2. Definitions of empowerment, household, woman, and child outcome variables

Indicator	Definition of Indicator
Empowerment	
Empowerment	
Empowerment score	Weighted average of achievements in the 10 indicators if the female respondent is disempowered, = 1 if she is empowered. Censored empowerment scores are used for consistency with the construction of the WEAI and other Alkire-Foster indices.
Intrahousehold inequality	
Intrahousehold inequality score	Difference in the male and female empowerment scores, = 0 if the female respondent is empowered.
Subdomain indicators	
Input in productive decisions	Number of domains an individual has some input in decisions or feels can make decisions
Autonomy in production	Number of domains an individual has autonomy in (Relative Autonomy Index > 1)
Ownership of assets	Number of agricultural assets owned (sole or joint) by an individual
Purchase, sale or transfer of assets	Number of agricultural assets an individual can decide to buy, sell, transfer (sole or joint)
Access to and decisions on credit	Number of decisions over credit (sole or joint) in the last 12 months
Control over use of income	Number of income decisions (sole or joint) in the last 12 months
Group membership	Number of groups individual is member of (0-11). If the individual reports no groups in his/her community, he/she is considered a member of 0 groups.
Speaking in public	Number of contexts an individual is comfortable speaking in public (This indicator was not collected in Cambodia.)
Workload	Number of hours worked per day by individual (Mozambique: This is a binary indicator for excessive workload defined as working more than 10.5 hours per day.)
Leisure	1-10 score indicating an individual's satisfaction with time for leisure
Household outcomes	
Household hunger score	0-6 score indicating level of food deprivation with 0-1 indicating little to no hunger, 2-3 moderate hunger and 4-6 severe hunger within the household.
Household dietary diversity score	Number of food groups consumed in the last 24 hours out of 9: (1) starchy staples; (2) green leafy vegetables; (3) other vitamin-A rich fruits and vegetables; (4) other fruits and vegetables; (5) organ meat; (6) meat and fish; (7) eggs; (8) legumes and nuts; (9) milk and milk products. (Bangladesh and Tanzania: The recall period is the last seven days instead of the last 24 hours. Tanzania: 10 food groups were included: cereals, grains, cereal products; roots, tubers, plantains; nuts and pulses; vegetables; meat, fish and animal products; fruits; milk/milk products; fats/oils; sugar/sugar products, honey; spices/condiments.)

Indicator	Definition of Indicator
Women's outcomes	
Women's dietary diversity score (*15-49 years old)*	Number of food groups consumed based on 24-h recall out of 9: (1) starchy staples; (2) green leafy vegetables; (3) other vitamin-A rich fruits and vegetables; (4) other fruits and vegetables; (5) organ meat; (6) meat and fish; (7) eggs; (8) legumes and nuts; (9) milk and milk products.
Women's BMI (*15-49 years old)*	Log BMI form used. Defined as the ratio of weight (in kilograms) to the square of height (in meters).. Pregnant women are excluded from the BMI estimation sample for all countries.
Children's outcomes	
Exclusive breastfeeding (*children 0 – 6 months)*	A child aged zero to six months is defined as exclusively breastfed if he or she did not consume any other liquids or foods other than breast milk in the preceding 24 hours.
Children's dietary diversity score (*children aged 6-23 mo)*	The number of food groups consumed in the last 24 hours out of seven food groups, which include (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) flesh foods; (5) eggs; (6) vitamin-A-rich fruits and vegetables; and (7) other fruits and vegetables.
HAZ (*children 0 – 23 months)*	Height-for-age Z-score
WHZ (*children 0 – 23 months)*	Weight-for-height Z-score
WAZ (*children 0 – 23 months)*	Weight-for-age Z-score.

3. Data and context

We use data from the Feed the Future population-based surveys in Bangladesh, Cambodia, Ghana, Mozambique, and Tanzania, and one survey from the impact evaluation of Suaahara, a nutrition intervention in Nepal. Although data to compute the WEAI was collected for 19 countries, some data sets do not have household or individual-level data on nutrition-related outcomes that can be matched directly to the WEAI data. In some countries, nutrition indicators derived from the Demographic and Health Surveys were used for country-level analysis. We focus on the six countries for which individual-level data on both WEAI and nutrition are available.

The countries included in our study are lower- to higher-middle income countries, with gross national income (GNI) per capita in 2018 ranging from 1,300 USD in Mozambique to 4,650 USD in Ghana (Table 3). Agriculture, while important in these countries, accounts for less than a third of GDP in terms of value added, and a sizeable portion of the rural population lives in poverty, ranging from a fifth

(Cambodia, 20.8%) to more than half (Mozambique, 56.9%). Although the reliability of statistics on the female share of employment in agriculture has been questioned (Doss, 2014), females account for a significant portion of total employment in agriculture; ranging from 43% to 60% in the countries for which we have data. Conversely, agriculture is an important sector for females in terms of employment; female employment in agriculture as a share of total female employment ranges from 30.4% to 81.8%.

Table 3. National level statistics

	South and Southeast Asia			Africa		
	Bangladesh	Nepal	Cambodia	Ghana	Mozambique	Tanzania
Gross national income per capita based on purchasing power parity (current international $) (2018)	4,560	3,090	4,060	4,650	1,300	3,160
Agriculture, value added, as share of GDP (2018) (%)	13.1	25.0	22.0	19.7[a]	21.4	28.7[a]
Proportion of rural population in poverty (%)	35.2[b]	27.4[b]	20.8[c]	37.9[c]	56.9[d]	33.3[e]
Female employment in agriculture as share of total employment in agriculture (%)	45.1[a]	60.6[d]	46.4[c]	43.4[f]	not available	not available
Female employment in agriculture as share of total female employment (2018) (%)	59.4	80.1	30.4	26.4	81.8	69.4

Source: (Food and Agriculture Organization of the United Nations, n.d.; The World Bank, n.d.-b, n.d.-d, n.d.-a, n.d.-c), various years [a]2017 [b]2010 [c]2012 [d]2008 [e]2011 [f]2015
Notes: This table was adapted from (Komatsu, Malapit, & S Theis, 2018).

Table 4 presents characteristics of the household and the index woman, while Table 5 presents child-level characteristics, both from the estimation samples. Except for Nepal, with high rates of male outmigration, the majority of sample households are dual-adult households with an adult male and an adult female present. Literacy rates among primary adult females range from 19.2% in Mozambique to 87.9% in Ghana; the age of the primary woman ranges from 37.6 years in Bangladesh to 45.6 in Ghana. Household sizes range from 4.8 in Bangladesh to 6.38 in Ghana. Households have relatively low hunger

scores but limited dietary diversity. In the estimation sample, excluding Bangladesh, households consumed between 3 to 4 out of 9 possible food groups in the past 24 hours. The higher dietary diversity in Bangladesh (8.5 food groups out of 9) may be attributable to using a longer seven-day recall period. The primary female's dietary diversity score mirrors that of her household; however, the Bangladesh household score and the women's dietary diversity score are not comparable owing to the different recall periods. The average woman's BMI is within normal range.

Table 4. Household characteristics, estimation sample

	South and Southeast Asia			Africa		
Characteristic	Bangladesh n=3,674	Nepal n=2,937	Cambodia n=1,633	Ghana n=1,567	Mozambique n=910	Tanzania n=158
Dual-adult household (%)	87.30	37.28	83.50	75.07	60.94	64.24
Primary woman is literate (%)	40.83	n/a	48.91	87.98	19.20	75.17
Age of primary women (years)	37.62	43.23	43.50	45.62	40.18	39.48
Household size	4.81	6.28	5.28	6.38	5.00	5.69
Dependency ratio	0.91	1.12	0.66	1.19	1.25	1.27
Woman's empowerment score	0.67	0.58	0.98	0.66	0.80	0.93
Intrahousehold inequality score	0.16	0.25	0.01	0.20	0.11	0.03
Number of:						
Agricultural domains woman has some input in decisions or feels can make decisions	3.09	3.85	5.67	3.34	2.42	5.20
Agricultural domains woman has autonomy in	2.26	0.47	3.86	3.25	2.08	1.58
Agricultural assets woman owns	1.49	1.67	3.51	0.82	2.38	3.64
Agricultural assets woman can decide to buy, sell, or transfer	2.12	1.92	3.71	0.92	2.34	3.75
Sole or joint decisions woman has over credit	1.23	0.64	1.75	0.49	0.16	1.33
Income decisions woman makes	2.53	2.04	5.72	1.77	1.78	3.16
Groups woman is a member of	0.31	2.84	3.36	2.93	1.11	1.27
Contexts in which woman is comfortable speaking in public	2.92	3.56	n/a	3.45	1.88	2.21
Hours woman worked per day	8.95	11.03	9.00	10.43	n/a	9.42

	South and Southeast Asia			Africa		
Characteristic	Bangladesh n=3,674	Nepal n=2,937	Cambodia n=1,633	Ghana n=1,567	Mozambique n=910	Tanzania n=158
Woman's satisfaction with leisure (1-10 score)	5.21	3.59	6.34	6.61	7.26	6.76
Household hunger score	0.11	0.02	0.01	1.29	n/a	0.59
Household dietary diversity score	8.49	3.83	3.76	3.83	3.28	4.33
Women's dietary diversity score (15-49 years)	4.05	3.83	3.76	3.83	3.28	4.43
Women's BMI (15-49 years)	20.64	20.22	21.08	21.34	n/a	22.38

Sources: Authors' calculations using data from Bangladesh Integrated Household Survey (2011) for Bangladesh; baseline survey of Suaahara project for Nepal (2012); and Feed the Future surveys for Cambodia (2012), Ghana (2012), Mozambique (2012–2013), and Tanzania (2016).
Note: Weights used. n/a indicates that the data were not available.

Compliance with recommended infant and young child feeding (IYCF) practices varies across our six-country sample (Table 5). Rates of exclusive breastfeeding range from 18% in Bangladesh to 78% in Cambodia. Children age 6-23 months do not have diverse diets. Thirty-two to 38% of children age 0-23 months are stunted, across our study sample; 11 to 17 percent are wasted, and 18 to 30 percent are underweight.

Sample sizes in the regressions vary, owing to the sample size of the survey itself, the different units of observation (household, woman, child), and the degree to which data were complete or nonmissing for the dependent variables, the WEAI, and the other regressors. The specific number of observations is indicated in the regression tables; we discuss the number of household-, woman-, and child-level observations here for comparative purposes. We use dietary diversity to illustrate the differences in sample sizes across countries because these indicators were collected for more countries than the anthropometric indicators (these were not collected in Mozambique). The estimation sample for

the household-level sample for Bangladesh was 4,283 observations; the women's dietary diversity regressions were run on 4,494 observations, and the child-level dietary diversity sample consisted of 726 observations on children between 6-23 months of age. For Nepal, our household estimation sample has 2,033 observations, with 2,031 women and 956 children in the relevant dietary diversity regressions; in Cambodia, our estimation sample consists of 1,923 households, 2,800 women, and 365 children. The Ghana estimation sample contained 2,011 observations for households, 2,800 observations for women's dietary diversity, and 490 observations for children. The Mozambique sample included 1,232 household observations, 1,210 observations on women's dietary diversity, and a much smaller set of 310 observations on children's dietary diversity. Because multiple women were often interviewed in the same household, the number of observations for women can sometimes be larger than the number of households in the sample. Our estimation sample is smallest for Tanzania. The main survey only covered 727 households; missing data on some WEAI indicators implied that many households were dropped from the estimation sample. The estimation sample consists of observations on only 249 households and 238 women; information on children was not collected. Given the marked difference in the Tanzania sample size, the regressions are underpowered and results should be taken with caution.

Table 5. Children's characteristics, infant and young child feeding (IYCF) practices, and anthropometric measures, estimation sample

	South and Southeast Asia			Africa	
Characteristic	Bangladesh n=767	Nepal n=1,541	Cambodia n=374	Ghana n=733	Mozambique n=353
Female child (%)	51.28	49.97	46.82	50.12	51.17
Age of mother (years)	27.65	24.52	29.23	29.00	28.88
Height of mother (cm)	150.29	151.75	152.62	158.73	n/a
Mother is literate (%)	68.03	n/a	68.41	8.67	20.30
Exclusive breastfeeding (children 0-6 months, =1 if achieved, %)	n=535	n=313	n=74	n=183	
Boys	10.56	46.06	81.19	60.12	n/a
Girls	29.03	52.03	74.14	62.10	n/a
All	17.56	48.88	78.32	60.98	n/a
Child dietary diversity score (children 6-23 months, out of 7 food groups)	n=767	n=1388	n=374	n=504	n=353
Boys	1.65	2.64	2.55	2.37	2.49
Girls	1.90	2.74	2.61	2.60	2.30
All	1.78	2.69	2.58	2.49	2.39
HAZ (children 0-23 months)	n=767	n=1486	n=374	n=665	
Boys	-1.61	-1.46	-1.56	-0.99	n/a
Girls	-1.51	-1.35	-1.20	-0.89	n/a
All	-1.56	-1.41	-1.39	-0.94	n/a
WHZ (children 0-23 months)	n=760	n=1479	n=374	n=654	
Boys	-0.44	-0.88	-0.54	-0.37	n/a
Girls	-0.76	-0.86	-0.37	-0.56	n/a
All	-0.60	-0.87	-0.46	-0.47	n/a
WAZ (children 0-23 months)	n=767	n=1495	n=374	n=703	

	South and Southeast Asia			Africa	
Characteristic	Bangladesh n=767	Nepal n=1,541	Cambodia n=374	Ghana n=733	Mozambique n=353
Boys	-1.33	-1.44	-1.29	-0.76	n/a
Girls	-1.42	-1.39	-0.97	-0.77	n/a
All	-1.38	-1.42	-1.14	-0.77	n/a
Stunted (children 0-23 months, %)	n=767	n=1486	n=374	n=665	
Boys	39.04	33.51	38.71	35.03	n/a
Girls	36.38	31.89	35.44	28.91	n/a
All	37.67	32.71	37.18	32.05	n/a
Wasted (children 0-23 months, %)	n=760	n=1479	n=374	n=654	
Boys	11.33	15.63	10.99	16.98	n/a
Girls	12.90	13.03	11.36	16.53	n/a
All	12.14	14.33	11.16	16.76	n/a
Underweight (children 0-23 months, %)	n=767	n=1495	n=374	n=703	
Boys	27.47	30.98	25.67	19.81	n/a
Girls	28.06	29.74	15.27	16.34	n/a
All	27.78	30.37	20.80	18.07	n/a

Sources: see notes for Table 4. No child-level outcomes were available for Tanzania.
Notes: Weights used.

4. Methods

We estimate regressions with the same set of variables across countries, following the methodology of Malapit and Quisumbing (2015), Malapit et al. (2015) and Sraboni et al. (2014).

Because the WEAI captures agency within the agricultural sector, we restrict the sample to rural households engaged in agriculture. Our estimation samples include both dual-headed and female-headed households, because regressions estimated only on the sample of dual headed households were similar to those using the combined sample, and we wanted to take advantage of the larger sample size to have greater statistical power. We restrict the sample to dual-headed households in regressions using the intrahousehold inequality score (IIS), which is the difference between the male and the female empowerment score.

We estimate the following equations using ordinary least squares:

For household level outcomes:

$$\boldsymbol{N_h} = a_0 + a_1\, empowerment + \boldsymbol{a_2 I} + \boldsymbol{a_3 H} + \varepsilon, \quad (1)$$

For woman level outcomes:

$$\boldsymbol{N_w} = a_0 + a_1\, empowerment + \boldsymbol{a_2 I} + \boldsymbol{a_3 H} + \varepsilon, \quad (2)$$

where $\boldsymbol{N_h}$ is a vector of nutritional outcomes at the household level (such as household dietary diversity) and $\boldsymbol{N_w}$ is a vector of woman-level nutritional outcomes (women's dietary diversity and BMI); *empowerment* is a measure of empowerment derived from the WEAI or one of its component indicators; $\boldsymbol{I}$ is a vector of individual characteristics; $\boldsymbol{H}$ is a vector of household characteristics; $\boldsymbol{a_1}$, $\boldsymbol{a_2}$ and $\boldsymbol{a_3}$ are the parameters to be estimated; and ε is an error term.

To examine the association between the individual WEAI indicators and the nutritional outcome, we run separate regressions on each of the 10 WEAI indicators with household and individual level controls to avoid collinearity among the indicators. The coefficient of interest is a_1, which captures how the primary female's empowerment is correlated with the nutritional outcome of either the household or primary female member, controlling for a set of observable household characteristics (dual adult household, number of literate male/female household members, whether the primary woman is literate

(can read and write), age and age squared of the primary woman, household size, dependency ratio, household wealth quintile, geographic region) in (1) and both household and individual characteristics (whether the primary woman is literate, age, and age squared) in (2).[1]

In the child regressions (3), we control for the child's age and sex and the mother's age, height, and literacy, in addition to the household characteristics described above. Estimating a pooled regression with both boys and girls assumes that women's empowerment influences child nutritional outcomes in the same way for both sexes. To test whether women's empowerment has a differential impact on children by sex, we include a dummy variable for the sex of the child (=1 if the child is a girl) and interact this dummy variable with the empowerment variable.

The resulting equation for child level outcomes is:

$$\boldsymbol{N}_c = b_0 + b_1\, empowerment + b_2\, female + b_3\,(empowerment \times \text{female}) + \boldsymbol{b_4}\,\boldsymbol{I} + \boldsymbol{b_5}\,\boldsymbol{H} + v \qquad (3)$$

where b_1, b_2, b_3, $\boldsymbol{b_4}$ and $\boldsymbol{b_5}$ are the parameters to be estimated and v is an error term. For boys, the relationship between women's empowerment and children's dietary quality, for instance, is given by b_1. For girls, the relationship is given by $(b_1 + b_3)$. If b_3, the coefficient on the interaction term between empowerment and the female dummy, is significantly different from zero, this suggests that women's empowerment has differential effects on boys and girls.

Empowerment measures may also be affected by the same factors that influence nutritional outcomes. However, because we have not found credible instruments for these indicators, we treat our estimated coefficients as indicative of associations rather than causation.

Our analysis aims to identify the dimensions of women's empowerment that are more strongly associated with household, maternal, and child nutrition outcomes. We expect that results will vary across countries owing to the culture- and context-specific nature of gender dynamics. We will use these results to identify potential entry points for programs and interventions that will address both disempowerment

[1] The Bangladesh and Nepal surveys also collected information on years of schooling completed by all applicable household members. Results were robust to the specification of the women's education variable (years of schooling, primary female years of education completed, or a dichotomous variable for literacy status). Our main specification uses the literacy dummy because it is common to all countries.

and poor nutrition. The empowerment measures used in the regression analysis are operationalized in Table 2. These measures are continuous and differ from the binary indicators used to construct the WEAI, allowing us to retain the variation in the underlying data without using the adequacy cutoffs used in the WEAI to define achievement.

5. Results

5.1 Women's empowerment, intrahousehold inequality, and nutritional outcomes

Tables 6 and 7 present coefficients of the women's empowerment score (5DE) and the intrahousehold inequality score (the difference between men's and women's 5DE scores) for household and maternal outcomes and for child anthropometric and infant and young child feeding (IYCF) outcomes, respectively. Model 1 includes the 5DE score while Model 2 includes the intrahousehold inequality score, both with household and individual controls. To compare outcomes that are measured using different units, we compute effect sizes, defined as the number of standard deviations in the outcome variables that are associated with a 1.0-SD change in the empowerment variable, and present them graphically in Figure 1. In Figure, 1, statistically significant associations are highlighted in brighter colors for emphasis and labeled with stars that correspond with the level of significance (*p<0.10, **p<0.05, ***p<0.01); in the discussion, we present the effect size in brackets following the regression coefficient.

Table 6. Women's empowerment, intrahousehold inequality, and household and women's dietary and nutrition outcomes, selected coefficients

	Household		Woman	
	HH hunger score	HH dietary diversity score	Women's dietary diversity score	Women's BMI
Bangladesh				
Model 1: Empowerment score	0.090**	0.252**	0.284*	-0.038**
	(0.038)	(0.115)	(0.150)	(0.016)
Model 2: Intrahousehold inequality score	-0.137***	-0.398***	-0.317*	0.029
	(0.039)	(0.127)	(0.168)	(0.019)
N	4,283	4,283	4,494	4,102
Nepal				
Model 1: Empowerment score	-0.053***		0.098	0.062***
	(0.020)		(0.128)	(0.015)
Model 2: Intrahousehold inequality score	0.038		0.099	-0.057***
	(0.030)		(0.161)	(0.019)
N	2,033		2,031	1,887
Cambodia				
Model 1: Empowerment score	-0.091		0.164	0.018
	(0.071)		(0.553)	(0.037)
Model 2: Intrahousehold inequality score	0.266		-1.236	-0.049
	(0.186)		(1.436)	(0.089)
N	1,923		2,800	2,285
Ghana				
Model 1: Empowerment score	0.309	-0.277	0.251	0.003
	(0.245)	(0.252)	(0.247)	(0.018)
Model 2: Intrahousehold inequality score	-0.254	0.425	-0.147	0.015
	(0.271)	(0.301)	(0.236)	(0.021)
N	2,011	1,997	2,123	
Mozambique				
Model 1: Empowerment score	-0.061		0.382	
	(0.175)		(0.265)	
Model 2: Intrahousehold inequality score	0.037		-0.596	
	(0.238)		(0.457)	
N	1,232		1,210	
Tanzania				
Model 1: Empowerment score	-0.533	0.781	0.056	0.106
	(0.566)	(0.596)	(0.893)	(0.081)
Model 2: Intrahousehold inequality score	0.234	-2.540	-4.595*	-0.145
	(1.195)	(1.708)	(2.412)	(0.186)
N	249	249	238	179

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors in parentheses. Covariates: whether a dual adult household, number of literate male/female household members, whether primary woman is literate, age and age squared of the primary woman, household size, dependency ratio, household wealth quintile, geographic region.

Table 7. Women's empowerment, intrahousehold inequality, child anthropometric outcomes, and infant and young child feeding practices

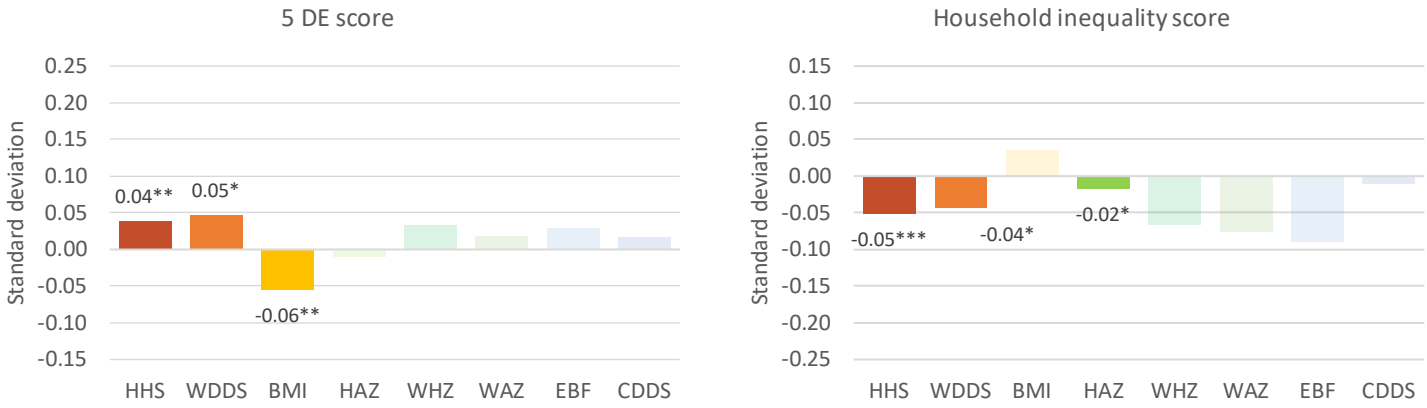
Empowerment variables	Child anthropometric outcomes			Infant and young child feeding practices	
	HAZ	WHZ	WAZ	EBF	CDDS
Bangladesh					
Model 1: Empowerment score	0.458	0.189	0.350	0.042	0.037
	(0.425)	(0.431)	(0.408)	(0.040)	(0.291)
Empowerment score x Girl	-0.720	0.003	-0.346	-0.034	0.119
	(0.631)	(0.544)	(0.554)	(0.055)	(0.431)
Girl	0.661	-0.294	0.162	0.050	-0.007
	(0.407)	(0.369)	(0.361)	(0.040)	(0.268)
Model 2: Intrahousehold inequality score	-0.609	-0.541	-0.845*	-0.069*	0.038
	(0.505)	(0.478)	(0.459)	(0.039)	(0.299)
Intrahousehold inequality score x Girl	1.161*	0.343	0.999*	0.048	-0.309
	(0.619)	(0.608)	(0.543)	(0.042)	(0.453)
Girl	0.018	-0.366**	-0.239*	0.010	0.139
	(0.190)	(0.176)	(0.143)	(0.018)	(0.152)
N	738	731	738	525	726
Nepal					
Model 1: Empowerment score	0.610**	-0.150	0.461*	0.096	0.238
	(0.246)	(0.288)	(0.255)	(0.185)	(0.253)
Empowerment score x Girl	-0.204	0.154	-0.044	-0.074	-0.064
	(0.324)	(0.366)	(0.321)	(0.259)	(0.330)
Girl	0.300	-0.092	0.106	0.048	0.093
	(0.193)	(0.209)	(0.191)	(0.162)	(0.193)
Model 2: Intrahousehold inequality score	-0.093	0.226	-0.325	-0.141	0.310
	(0.315)	(0.339)	(0.301)	(0.242)	(0.302)
Intrahousehold inequality score x Girl	0.036	-0.250	0.020	0.049	-0.413
	(0.417)	(0.400)	(0.390)	(0.308)	(0.392)
Girl	0.245*	0.035	0.080	-0.031	0.128
	(0.145)	(0.138)	(0.134)	(0.110)	(0.145)
N	1,030	1,025	1,037	229	956
Cambodia					
Model 1: Empowerment score	-0.338	1.535*	1.311	1.578***	-0.099
	(0.893)	(0.895)	(0.864)	(0.509)	(0.794)
Empowerment score x Girl	2.395	-0.963	0.485	-1.038	0.151
	(1.442)	(1.399)	(1.229)	(0.678)	(1.087)
Girl	-1.974	0.994	-0.227	0.984	-0.103
	(1.384)	(1.351)	(1.171)	(0.666)	(1.007)
Model 2: Intrahousehold inequality score	1.748	-1.677	-1.023	-1.622*	-0.970
	(1.831)	(2.049)	(2.117)	(0.874)	(1.410)
Intrahousehold inequality score x Girl	-2.523	1.911	0.432	-2.411	2.739
	(3.157)	(3.009)	(2.660)	(2.216)	(2.330)

Empowerment variables	Child anthropometric outcomes			Infant and young child feeding practices	
	HAZ	WHZ	WAZ	EBF	CDDS
Girl	0.344**	0.170	0.329**	-0.112	0.016
	(0.171)	(0.156)	(0.163)	(0.079)	(0.178)
N	353	353	353	78	365
Ghana					
Model 1: Empowerment score	0.868	0.063	0.900**	0.060	1.318***
	(0.551)	(0.432)	(0.447)	(0.254)	(0.480)
Empowerment score x Girl	-2.310**	0.875	-1.695**	-0.047	-2.606***
	(1.022)	(0.768)	(0.840)	(0.292)	(0.687)
Girl	1.710**	-0.748	1.159**	0.072	1.858***
	(0.675)	(0.498)	(0.523)	(0.219)	(0.494)
Model 2: Intrahousehold inequality score	-1.046	0.210	-0.857*	-0.169	-1.401**
	(0.636)	(0.507)	(0.498)	(0.305)	(0.559)
Intrahousehold inequality score x Girl	2.275**	-1.251	1.622**	0.026	2.754***
	(0.949)	(0.925)	(0.780)	(0.384)	(0.788)
Girl	-0.339	0.102	-0.349	0.021	-0.415
	(0.323)	(0.341)	(0.282)	(0.111)	(0.260)
N	638	628	676	180	490
Mozambique					
Model 1: Empowerment score	n.a.	n.a.	n.a.	n.a.	0.277
					(0.442)
Empowerment score x Girl	n.a.	n.a.	n.a.	n.a.	0.506
					(0.603)
Girl	n.a.	n.a.	n.a.	n.a.	-0.452
					(0.475)
Model 2: Intrahousehold inequality score	n.a.	n.a.	n.a.	n.a.	-0.521
					(0.678)
Intrahousehold inequality score x Girl	n.a.	n.a.	n.a.	n.a.	0.217
					(0.913)
Girl	n.a.	n.a.	n.a.	n.a.	-0.044
					(0.205)
N					310

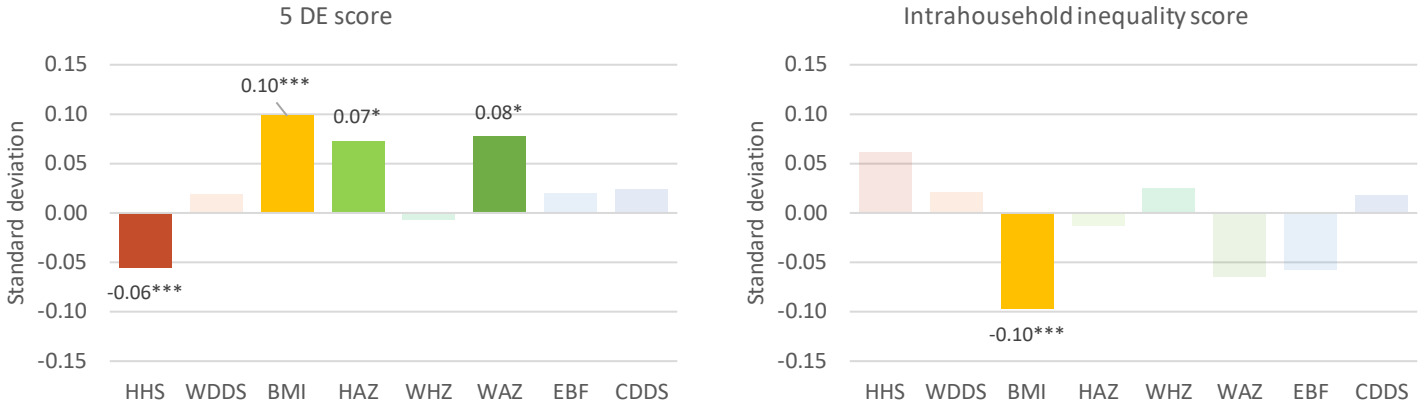
Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. In addition to the household-level covariates in Table 6, covariates in the child-level regressions include the child's age and sex and the mother's age, height, and literacy.

Figure 1. Women's empowerment score, intrahousehold inequality score, and nutritional outcomes: Effect sizes

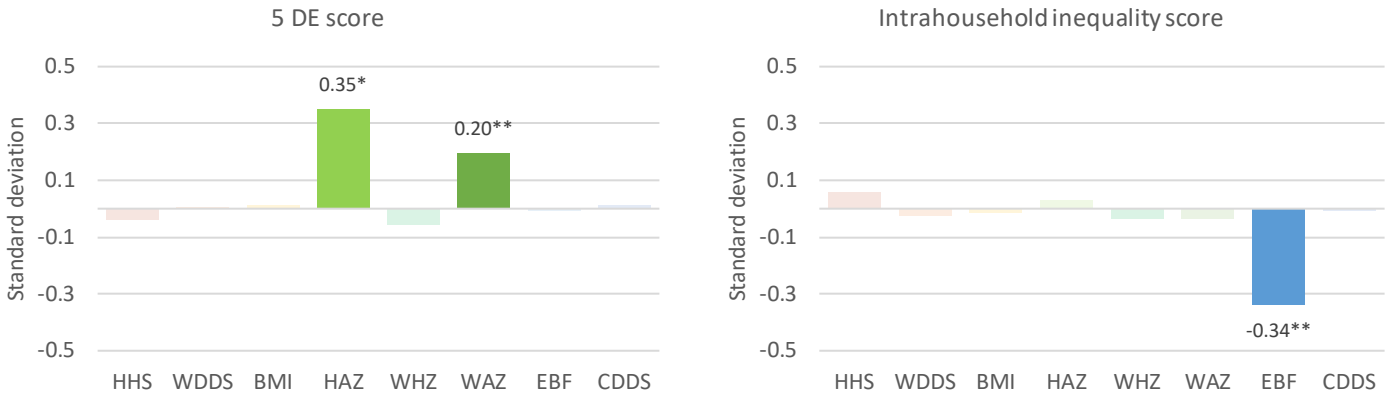
Bangladesh



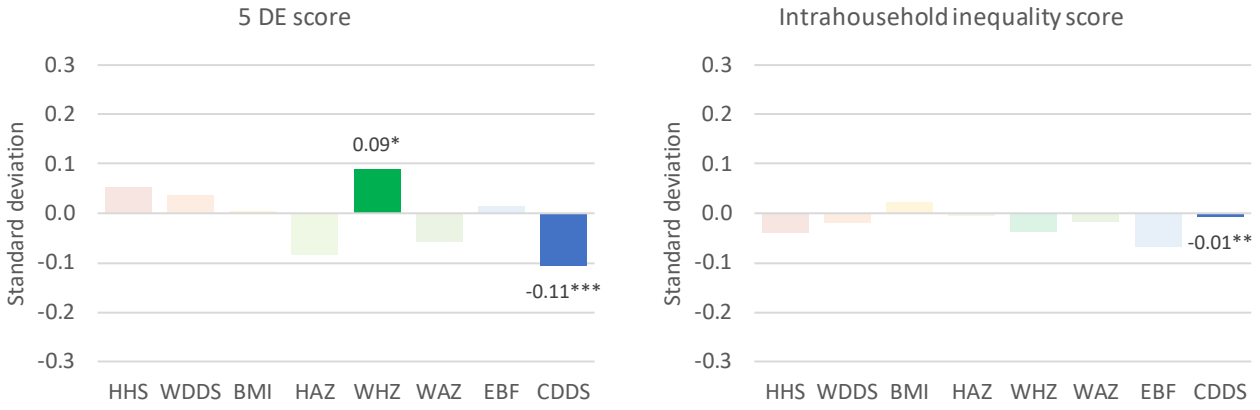
Nepal



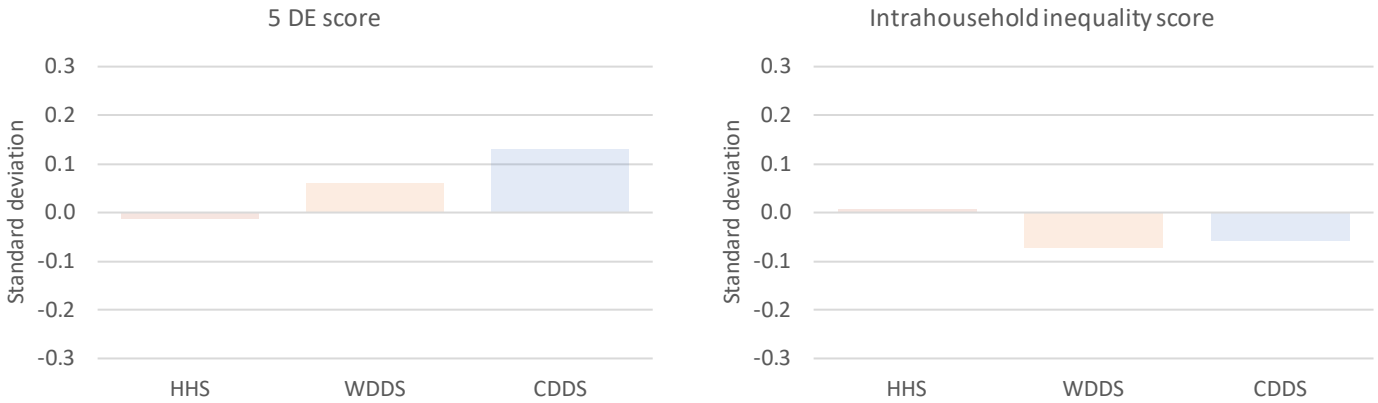
Cambodia



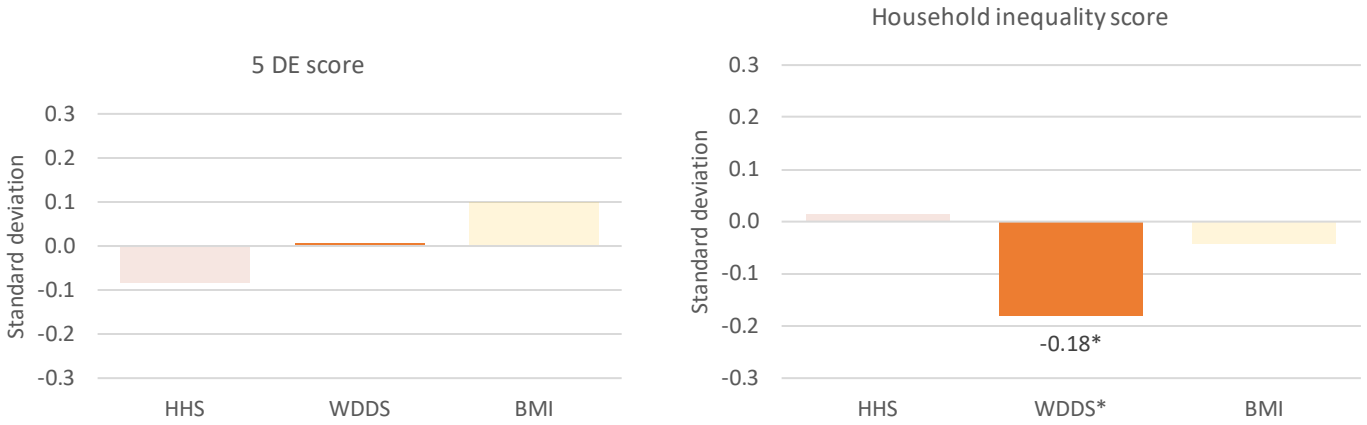
Ghana



Mozambique



Tanzania



Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Solid colors depict statistically significant impacts.

Legend: HHS: household hunger score; WDDS: women's dietary diversity score; BMI: body mass index (women's); HAZ: height-for-age Z-score; WHZ: weight-for-height Z score; WAZ: weight-for-age Z-score; EBF: exclusive breastfeeding; CDDS: child's dietary diversity score

We find that associations between the overall empowerment score and the intrahousehold inequality score and the food security and nutrition outcomes are not consistent across countries. In Bangladesh, women's 5DE score has mixed associations with household and women's nutrition outcomes. It is positively associated with women's dietary diversity (0.28, [0.05]); but is oddly associated with higher household hunger (0.09, [0.04]) and lower BMI (-0.04, [-0.06]) (Figure 1). Intrahousehold inequality also shows mixed associations with household, women's, and children's nutritional outcomes. Although greater intrahousehold inequality is associated with lower maternal dietary diversity (-0.32, [-0.04]), it is also associated with lower rates of household hunger (-0.14, [-0.05]), suggesting possible tradeoffs between household and women's nutritional outcomes. A reduction in the intrahousehold inequality score by one standard deviation is associated with a combined effect size (across boys and girls) of -0.02 on HAZ, a small and weakly significant improvement.

In Nepal, women's 5DE score has positive associations across household, maternal and child level nutrition outcomes. The overall 5DE score shows the most consistent association, with higher women's empowerment associated with lower household hunger (-0.05, [-0.06]), higher women's BMI (0.06, [0.10]) and positive effect sizes of 0.07 and 0.08 for HAZ and WAZ, respectively. The intrahousehold inequality score does not play a strong role in nutritional outcomes in Nepal, except for women's BMI, whereby greater intrahousehold inequality is associated with lower values of women's BMI (-0.06, [-0.10]). This is consistent with our earlier work on Nepal (Malapit, Kadiyala, Quisumbing, Cunningham, & Tyagi, 2013; Malapit et al., 2015).

In contrast to Bangladesh and Nepal, there are few significant associations between women's empowerment and women's nutritional outcomes in Cambodia. However, the associations that exist consistently reveal an association between women's empowerment and better IYCF practices and children's nutritional outcomes. Women's 5DE score and intrahousehold inequality score have no significant associations at the household or women's level, but higher 5DE scores are associated with higher child HAZ and WAZ scores and more equal households are associated with higher rates of exclusive breastfeeding.

In Ghana, neither the 5DE score nor the intrahousehold inequality score has any significant associations with household and mother nutritional outcomes. However, having a higher 5DE is associated with higher WHZ scores and less diverse diets for children, and lower intrahousehold inequality is positively associated with better children's dietary diversity. In Mozambique, neither the women's 5DE score nor the intrahousehold inequality score have any significant associations with household, women or children's nutritional outcomes; in Tanzania, where we only have information on household and maternal outcomes, 5DE scores do not have a significant association with household hunger scores, household and women's dietary diversity, or women's BMI. The intrahousehold inequality score has no significant associations with nutritional outcomes except for women's dietary diversity, whereby greater intrahousehold inequality is associated with substantially lower diet diversity scores (-4.60, [-0.18]).

5.2 Correlations between component indicators and nutrition outcomes

Because changes in the component indicators of the WEAI may offset each other, the relationship between the indicators and the WEAI is not necessarily monotonic. For example, increased participation in agricultural production or in groups may increase workload. Moreover, the aggregate score (5DE) cannot always be expected to be positively correlated with nutritional outcomes, necessitating the "unpacking" of the results by indicator. Thus, we estimate a third version of the regressions, Model 3,

which is run separately on each of the 10 WEAI indicators (expressed as continuous variables) with the same household and individual controls as Models 1 and 2. Estimated coefficients for all 10 indicators, with standard errors in parentheses, are presented in the same table for compactness in Appendix Tables 1 to 11; effect sizes for household and maternal outcomes are presented in Figure 2, for IYCF outcomes in Figure 3, and for child anthropometric outcomes in Figure 4.

5.2.1 Household hunger

The household hunger score is the only household-level measure common to all six data sets. Figure 2 shows the effect sizes of the relationships between each of the ten WEAI indicators and the hunger score; because a higher score is a worse outcome, a negative effect size should be interpreted as women's empowerment being associated with lower household hunger.

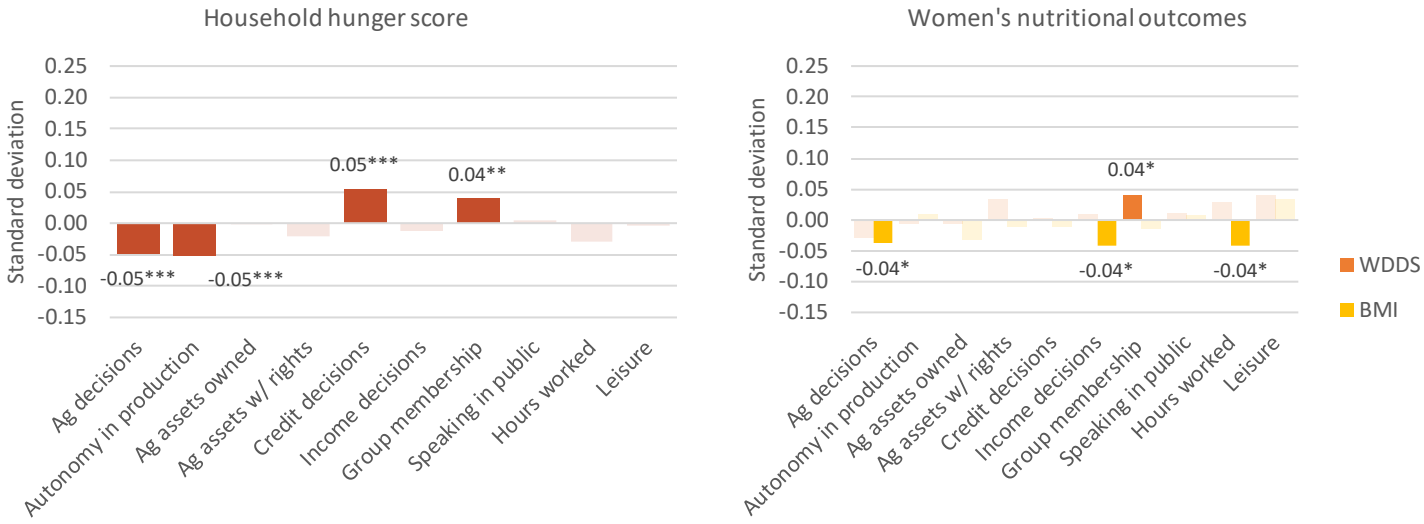
In Bangladesh, the number of agricultural decisions (-0.01, [-0.05]) and autonomy in production (-0.01, [-0.05]) are associated with lower HHS, but the number of credit decisions (0.02 [0.05]) and group membership (0.05, [0.04]) are associated with greater household hunger, possibly because poor households are more likely to seek credit and women from those households are likely to be targeted by NGOs for membership. In Nepal, women's asset rights (-0.01, [-0.09]) and comfort in speaking in public (-0.02, [-0.06]) are associated with lower household hunger scores, with larger effect sizes than those found in Bangladesh. Effect sizes in Cambodia, although indicative that the number of agricultural assets owned and group membership are associated with less hunger, are small in magnitude.

Results from the three African countries are inconsistent. In Ghana, the number of agricultural decisions (0.06, [0.12]) and assets (both ownership (0.10, [0.09]) and rights (0.10, [0.11])) are associated with higher household hunger. The result for the assets variable is unexpected but may be related to the possibility that women may be forced to make more agricultural decisions (including decisions over assets) in poorer households, a hypothesis that deserves further investigation. Autonomy in production (-0.10, [-0.17]) and income decisions (-0.06, [-0.06]) are associated with lower household hunger. In Mozambique, the number of agricultural assets women owned (-0.06, [-0.06]) and the number of

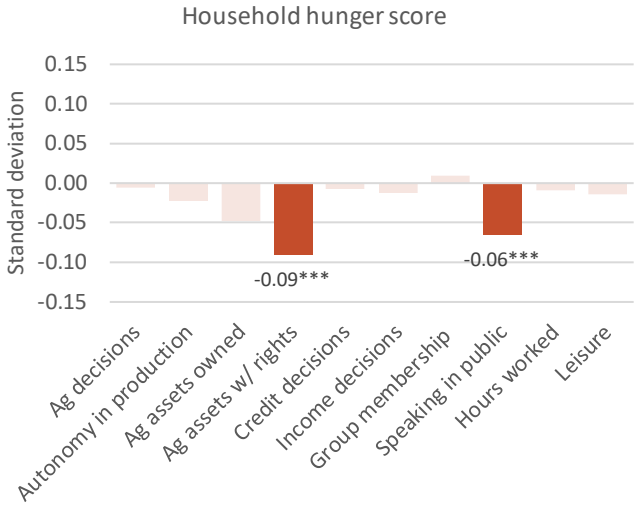
agricultural assets over which she has rights (-0.06, [-0.07]) are associated with reduced household hunger, but the number of credit decisions is associated with higher household hunger (0.11, [0.06]). However, these relationships are only weakly significant. Lastly, in Tanzania, the number of agricultural decisions (-0.17, [-0.28]) and ownership (-0.14, [-0.19]) and rights (-0.12, [-0.17]) to agricultural assets are all associated with lower household hunger.

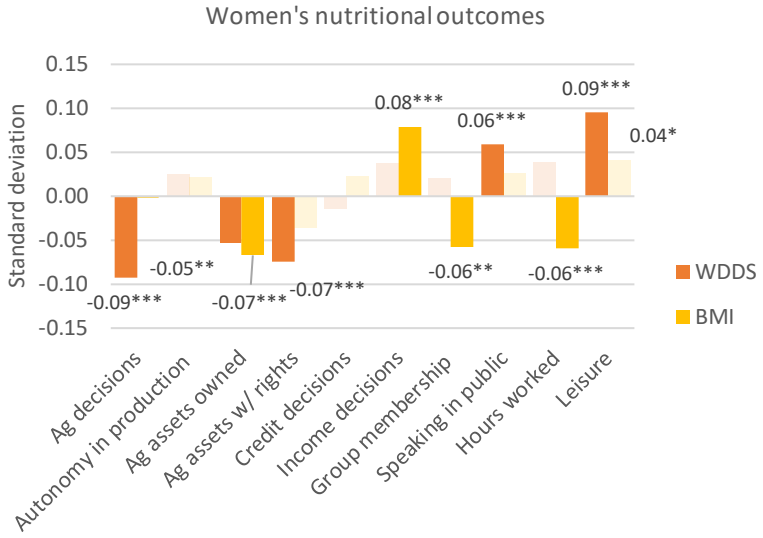
Figure 2. WEAI indicators and household and women's nutritional outcomes

Bangladesh

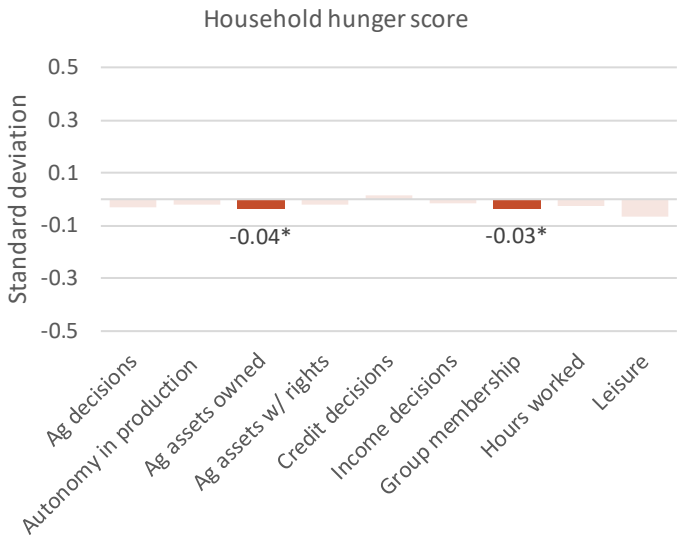


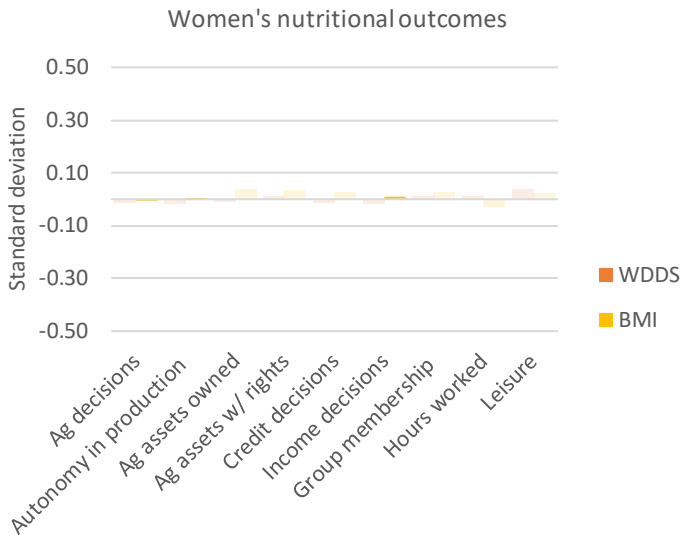
Nepal


Household hunger score
Standard deviation
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.09***
-0.06***
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure

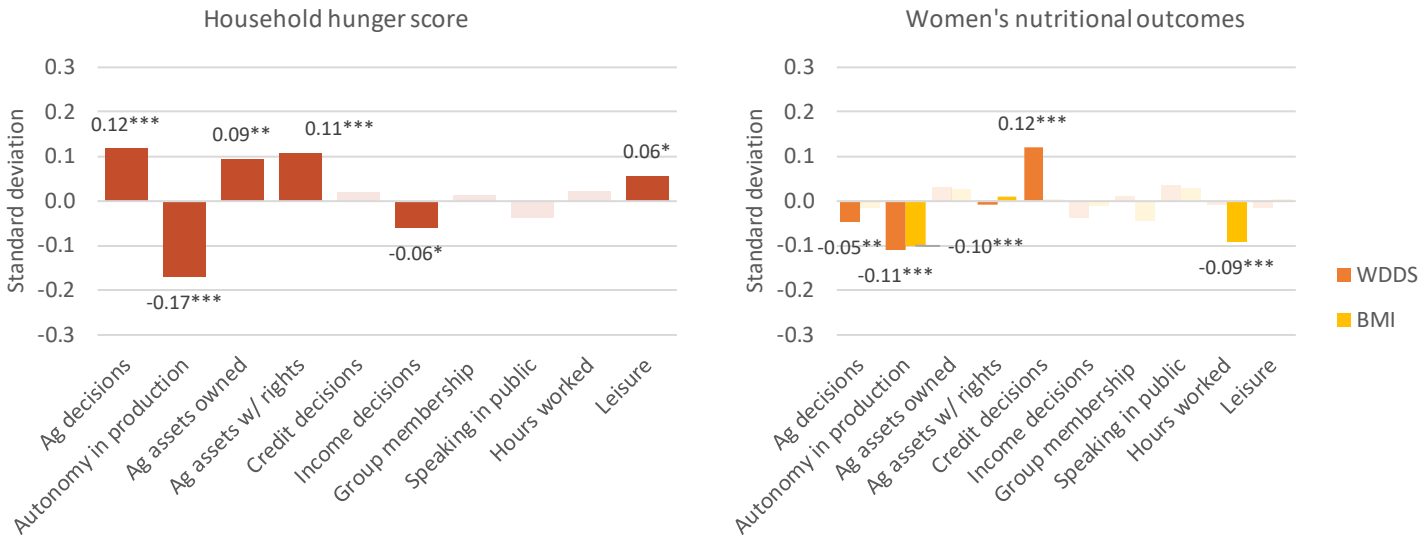

Women's nutritional outcomes
Standard deviation
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.09***
-0.05**
-0.07***
-0.07***
0.08***
-0.06**
0.06***
-0.06***
0.09***
0.04*
WDDS
BMI
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure

Cambodia

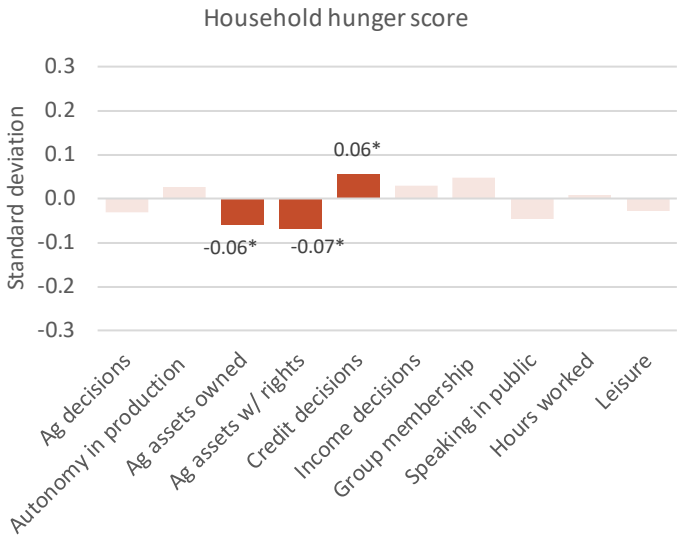

Household hunger score
Standard deviation
0.5
0.3
0.1
-0.1
-0.3
-0.5
-0.04*
-0.03*
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Hours worked
Leisure


Women's nutritional outcomes
Standard deviation
0.50
0.30
0.10
-0.10
-0.30
-0.50
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Hours worked
Leisure
WDDS
BMI

Ghana

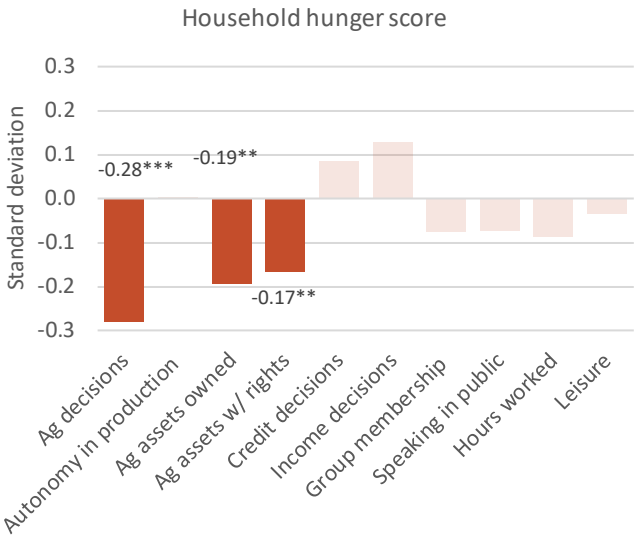

Household hunger score
Standard deviation
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
0.12***
-0.17***
0.09**
0.11***
-0.06*
0.06*
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure
Women's nutritional outcomes
Standard deviation
-0.05**
-0.11***
-0.10***
0.12***
-0.09***
WDDS
BMI

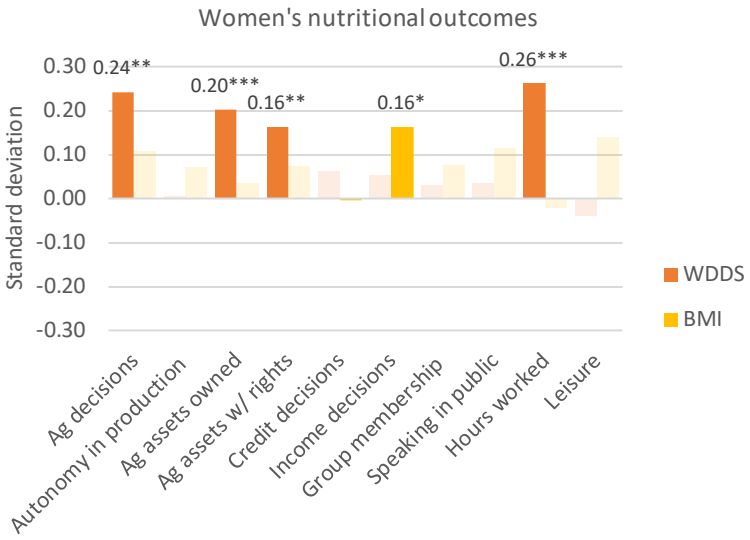
Mozambique


Household hunger score
Standard deviation
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.06*
-0.07*
0.06*
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure


Women's dietary diversity score
Standard deviation
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
0.06*
0.11***
0.06*
-0.08***
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure

Tanzania


Household hunger score
Standard deviation
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.28***
-0.19**
-0.17**
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure


Women's nutritional outcomes
Standard deviation
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
0.24**
0.20***
0.16**
0.16*
0.26***
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure
WDDS
BMI

5.2.2 Women's outcomes

Figure 2 also shows effect sizes for the ten WEAI indicators and two woman-level outcomes: the dietary diversity score and BMI. In Bangladesh, the number of agricultural decisions, the number of income decisions, and hours worked are negatively associated with BMI, while group membership is associated with greater dietary diversity. Because agricultural decisions and income decisions all enter positively into the WEAI score, this result indicates potentially offsetting relationships among indicators and nutritional outcomes if increased involvement in agriculture implies greater work effort. The effect sizes for Nepal also show some unexpected offsetting impacts, with agricultural decisions, assets owned, the number of assets with rights (all indicators positively contributing to the empowerment score) having negative associations with women's dietary diversity but speaking in public being positively associated with WDDS. Negative associations with the number of agricultural assets owned, group membership, and hours worked suggest potential negative associations of women's time burdens and BMI. In contrast to the Bangladesh and Nepal results, none of the effect sizes in Cambodia are significantly different from zero. Similar to the unexpected association with HHS, the number of agricultural decisions made and autonomy in production are associated with lower women's dietary diversity while the number of credit decisions contribute to higher women's dietary diversity.

In Ghana, households in the poorest quintile avail of credit at a higher rate than the wealthiest 20 percent of households. Thus, while using credit could indicate that a household is in financial need, these findings suggest that when a woman in a poor household can access credit and make decisions on its use, it has a positive effect on women's nutrition. The absence of credible instruments to address endogeneity prevent us from unpacking this result further. Possibly indicating work-nutrition tradeoffs, the number of hours worked and the number of agricultural assets owned (which could proxy higher involvement in agricultural labor) are negatively associated with women's BMI. The work-leisure-nutritional status tradeoff is also apparent in Mozambique, where WDDS is the sole woman-level outcome. Agricultural assets with rights, group membership, and hours worked are positively associated with dietary diversity,

but satisfaction with leisure is negatively associated with WDDS. Finally, in Tanzania, several WEAI indicators are positively associated with WDDS, with large effect sizes: agricultural decisions, the number of agricultural assets owned, the number of agricultural assets to which the woman has rights, and the number of hours worked. The number of income decisions a woman makes is also positively associated with BMI. Finally, in Tanzania, the number of agricultural decisions (0.20, [0.24]), agricultural assets owned (0.21, [0.20]), rights to agricultural assets (0.17, [0.16]), and hours worked per day (0.10, [0.26]) all emerge as significantly and positively related to women's dietary diversity, with the largest effect sizes among all the countries in our study. Finally, control over income decisions is significantly and positively associated with women's BMI (0.02, [0.16]). Women's empowerment is consistently associated with better nutritional outcomes at the household and woman levels in Tanzania, with agricultural decision making and ownership and rights to assets having the most consistent positive relationships with these outcomes.

5.2.3 Child outcomes

Infant and young child feeding practices. We present the combined effect sizes showing the relationship between the WEAI indicators and ICYF outcomes of boys and girls only for five countries (Figure 3) and anthropometric outcomes only for four (Figure 4) because of data availability.[2] The extent to which empowerment indicators are correlated with IYCF practices varies across countries. None of the component indicators are associated with Bangladeshi mothers' IYCF practices, while Nepali mothers with greater autonomy in production and those who are comfortable speaking in public have children with more diverse diets. Nepali mothers who are members of more groups are more likely to breastfeed exclusively. However, children of Nepali mothers who make more agricultural decisions have lower dietary diversity scores. In contrast, in Cambodia, children of mothers who make more agricultural and

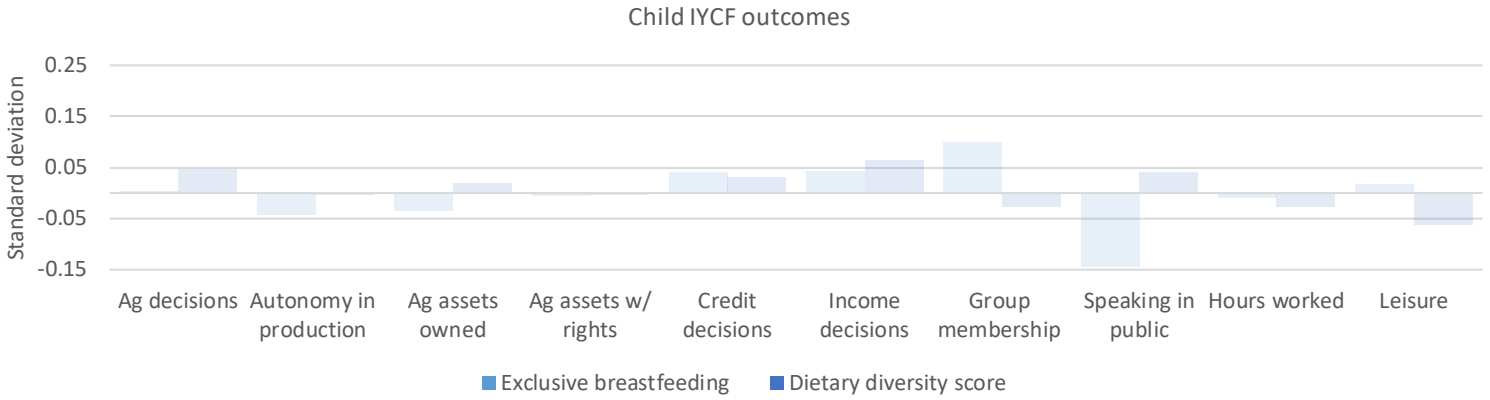
[2] The combined effect size is the effect size for both boys and girls, calculated as $b_1 + (b_3 \times \textit{proportion of girls in the estimation sample})$ (see Equation 3).

income decisions are more likely to be exclusively breastfed. In Ghana, although mothers who make more agriculture decisions are more likely to breastfeed exclusively, their children have less diverse diets. Mothers who have greater autonomy in production are less likely to breastfeed exclusively and have children with worse dietary diversity scores. Finally, in Mozambique, the number of agricultural assets owned, the number of which a woman has rights, the number of groups to which she belongs, and the number of hours worked are all positively associated with children's dietary diversity.

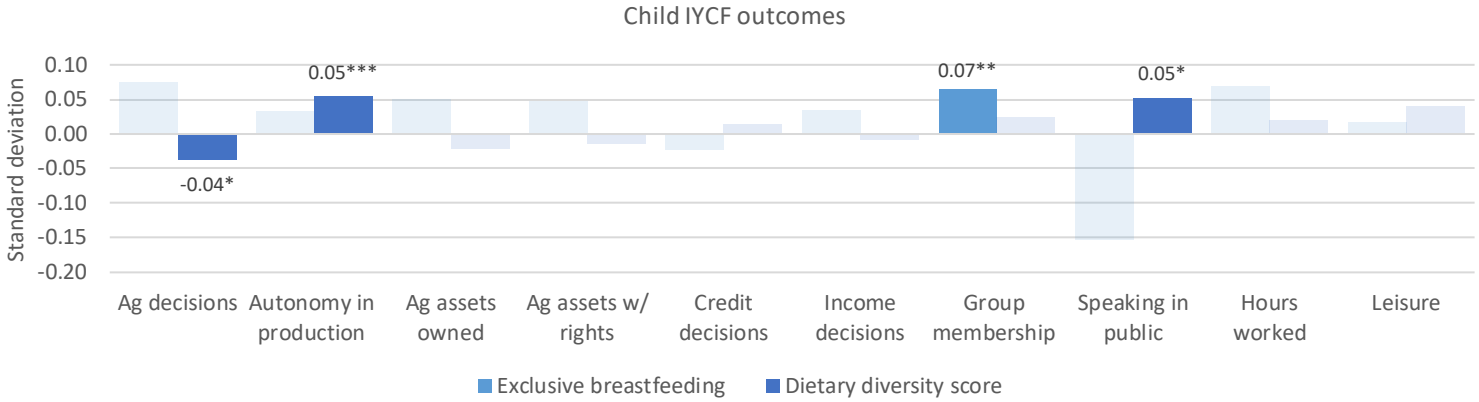
Anthropometric outcomes. We present effect sizes for the relationship between the WEAI indicators and child anthropometric outcomes in Figure 4. Similar to IYCF outcomes, empowerment indicators have varying relationships with anthropometric outcomes. Across the four countries with data on anthropometric outcomes, indicators related to credit decisions (Nepal, Ghana), income decisions (Nepal), and group membership (Bangladesh, Cambodia) are associated with better child anthropometric outcomes. However, the number of agricultural assets a woman has as well as the number of assets over which she has rights is negatively associated with anthropometric outcomes in Nepal and Cambodia. This is a surprising result. The findings related to time use—hours worked and satisfaction with leisure—indicate possible tradeoffs between participation in agriculture and child nutritional status. In Cambodia and Ghana, children of mothers who work more hours have lower WAZ and WHZ, respectively. In contrast, in Nepal and Cambodia, children of mothers who are satisfied with leisure are more likely to have higher HAZ and WAZ.

Figure 3. WEAI indicators and infant and young child feeding outcomes

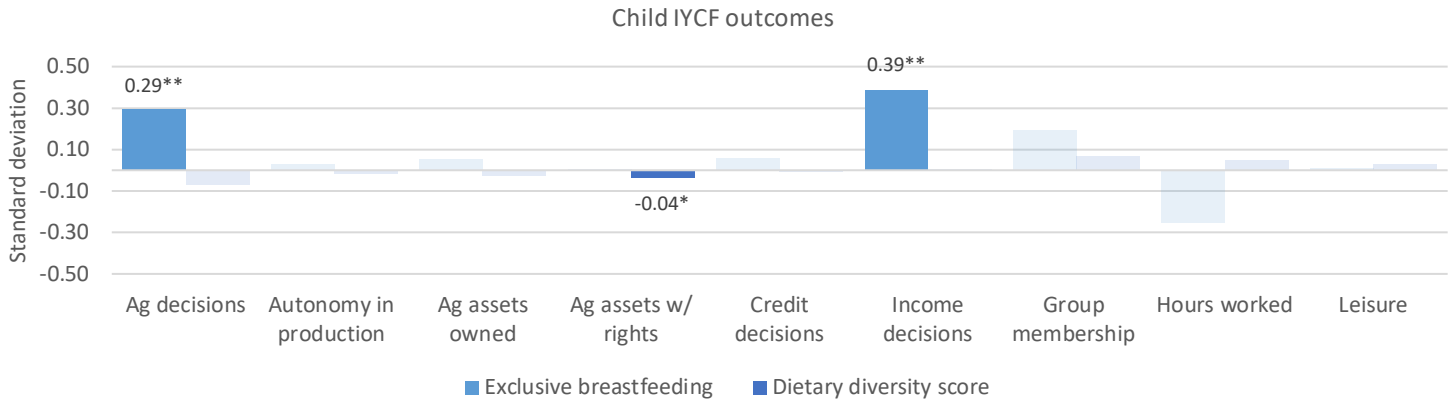
Bangladesh



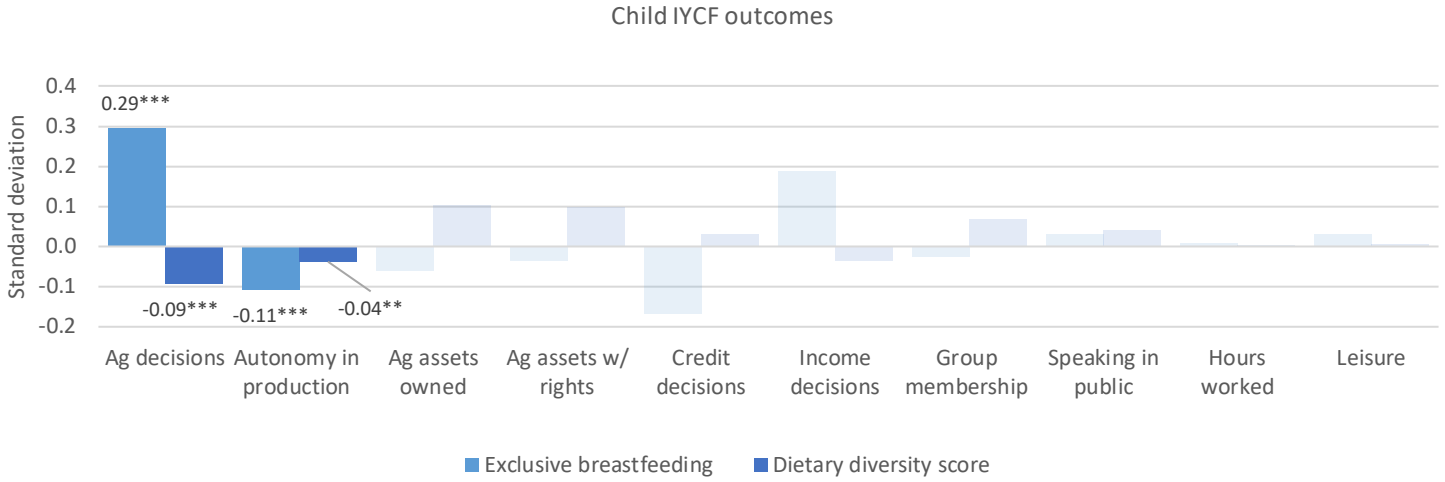
Nepal



Cambodia



Ghana



Mozambique

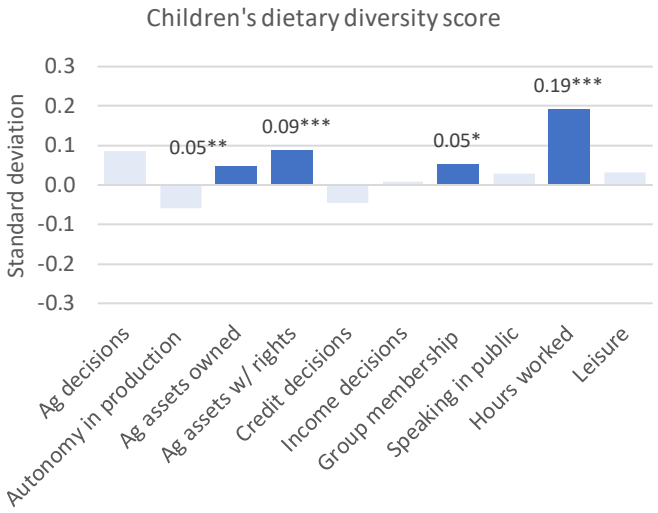
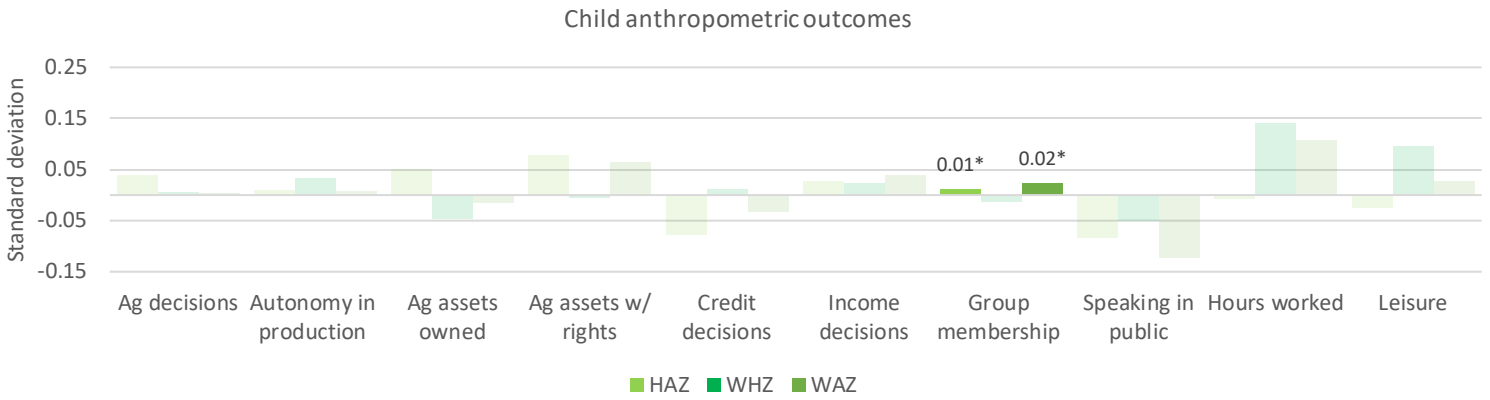
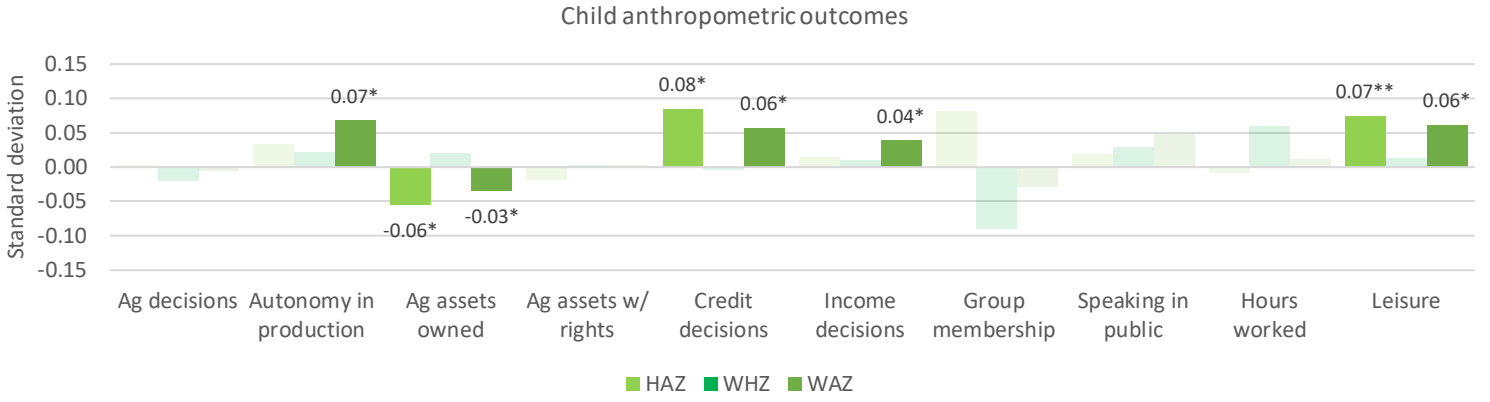

Children's dietary diversity score
Standard deviation
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
0.05**
0.09***
0.05*
0.19***
Ag decisions
Autonomy in production
Ag assets owned
Ag assets w/ rights
Credit decisions
Income decisions
Group membership
Speaking in public
Hours worked
Leisure

Figure 4. WEAI indicators and infant and child anthropometric outcomes

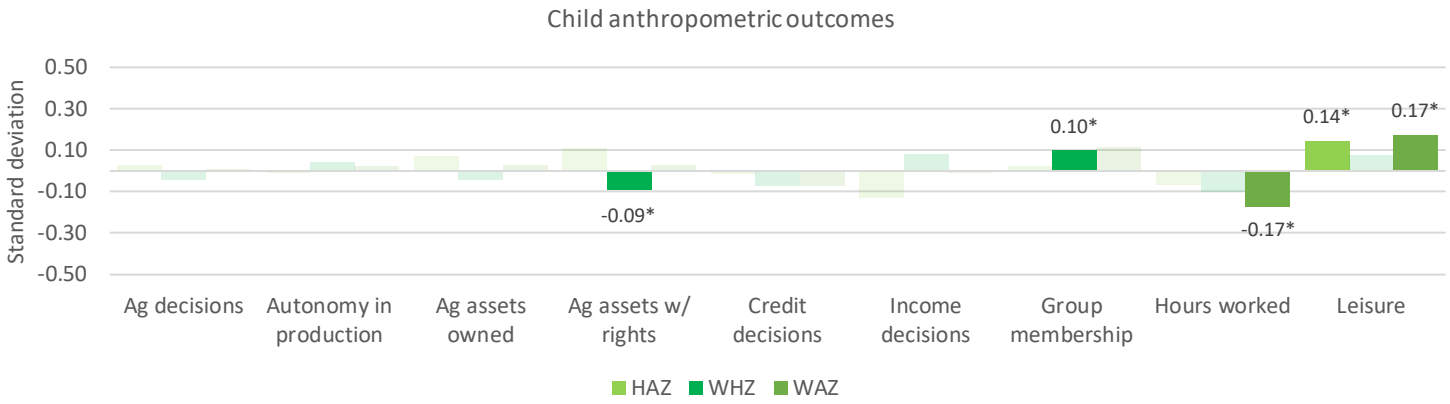
Bangladesh



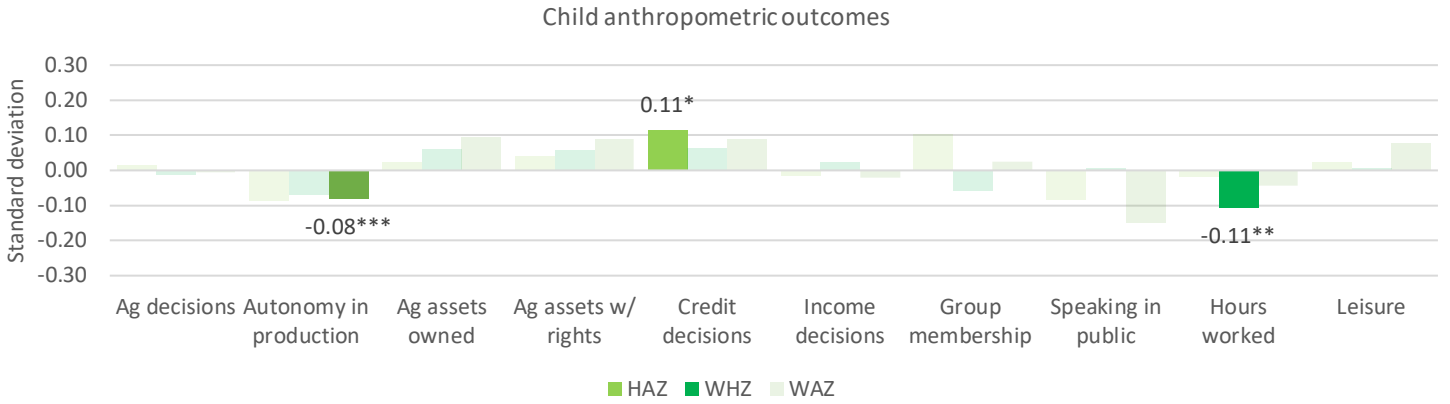
Nepal



Cambodia



Ghana



5.2.4 Interactions with child gender

Do more empowered mothers treat sons or daughters preferentially? We test this by examining interactions of child sex with the empowerment indicator. In Bangladesh, the interaction effects are significant for several child anthropometric outcomes, suggesting women's empowerment has differential effects on boys and girls. In general, women's empowerment has a negative association for girls relative to boys, which may reflect the persistence of son preference because women depend on sons for old age support. This is consistent with findings of Sraboni and Quisumbing (2018) and Malapit et al. (2019). In Nepal, few differential outcomes by child's gender are significant except that a higher number of agricultural decisions made by the mother is associated with a differential advantage for boys with respect to WAZ. In Cambodia, in contrast, a larger number of decisions made by women has differential positive associations for girls' anthropometric outcomes compared to boys. Oddly, a higher intrahousehold inequality score is consistently associated with higher HAZ and WAZ scores for girls. These results, which contrast with the two South Asian countries, may reflect the more egalitarian nature of gender relations and the lower degree of son preference in Southeast Asia.

In Ghana, consistent with findings in Malapit and Quisumbing (2015), the interactions with the girl variable for children's dietary diversity score are significant and positive for the intrahousehold inequality score and negative for the 5DE score. This suggests that girls consume more diverse diets in households where women are less empowered, and empowerment gaps between men and women are wider. This counter-intuitive result may be traced to the practice of feeding porridge as the primary complementary food to healthy children, whereas children who rejected the porridge or had poor appetite due to illness are more likely to be offered other foods to encourage them to eat (Davis, Tagoe-Darko, & Mukuria, 2003).[3] In Mozambique, several significant interaction

[3] Crosstabulations that are not reported here find that underweight girls in our sample consume less food groups on average (2.6 vs. 2.7 food groups) but are more likely to have the minimum diet diversity (37 vs. 36 percent) and minimum acceptable diet (21 vs. 17 percent) compared with well-nourished girls. This comparison,

effects indicate different associations for girls and boys. Girls experience worse IYCF outcomes compared to boys for empowerment indicators related to ownership and rights over assets, group membership, and hours worked per day. Thus, it appears that, except for Cambodia, women's empowerment is differentially associated with better outcomes for sons rather than daughters.

6. Discussion and policy implications

Similar to the findings of the systematic reviews (Carlson et al., 2015; Pratley, 2016; Santoso et al., 2019), associations between dimensions of empowerment and food security and nutrition outcomes are not consistent across countries. Some indicators contributing to empowerment have positive associations with food and nutrition security, while others have negative associations. Despite the inherent differences in contexts across the six countries, some important patterns emerge.

Overall women's empowerment (5DE) scores are more important in relation to nutritional outcomes in the South Asian countries in our sample compared to the African ones. Except for household hunger and women's BMI in Bangladesh, higher 5DE scores are associated with better nutritional outcomes, particularly for children. The strong associations in South Asia are consistent with Carlson et al. (2015), who attribute the consistent positive associations between women's autonomy and child nutritional outcomes in South Asia to the generally lower rates of women's autonomy in this region compared to other regions. The associations between women's 5DE and nutritional outcomes suggest that nutrition programs that also aim to empower women could have greater impacts than those without an empowerment objective. Moreover, where significant, greater equality between the primary man and woman within the same household is associated with better nutritional outcomes. This suggests that nutrition programs that also aim to reduce intrahousehold inequality could have greater impacts on nutritional outcomes than those that do not.

obtained from a slightly different estimation sample from that reported in Malapit and Quisumbing (2015), may be underpowered owing to the small sample size; these differences are not statistically significant.

However, we also find that not all empowerment domains are positively correlated with better nutrition, consistent with the findings of the systematic reviews. This suggests that tradeoffs exist. For example, ownership of assets and rights over assets have mixed associations depending on the outcome and context; ownership and rights are associated with better outcomes in some countries but are associated with worse women's and children's outcomes in Nepal and household outcomes in Ghana.

Potential tradeoffs between empowerment and nutritional outcomes may arise because increased involvement in agriculture also increases women's workload. Time use (workload + leisure) associations show the most consistent associations with nutrition outcomes across countries. In general, higher workloads are associated with higher maternal dietary diversity, but also with lower women's BMI and, in Cambodia and Ghana, worse child anthropometric outcomes. Women may work more to increase the quantity and quality of food available to their households, but longer work hours may also increase her energy expenditure, with consequences of lower maternal BMI and less time for childcare. This hypothesis regarding time for childcare is supported by our findings on satisfaction with leisure, which generally indicates a positive association between greater satisfaction with leisure and better child anthropometric and IYCF outcomes, although only for two countries (Nepal and Cambodia). Analysis of time use data from the WEAI in the same countries (except Tanzania) shows that women's domestic work and cooking time are positively correlated with more diverse diets (Komatsu et al. 2018), but that effects differ according to asset poverty status, with long hours spent in agriculture more likely to be important as a source of food and income for the poor. Komatsu et al. (2018) conclude that women's time allocation and nutrition responses to agricultural interventions are likely to vary by socioeconomic status and local context.

Son preference is a cultural phenomenon underlying our results for child anthropometric outcomes in Bangladesh, Nepal, and Ghana. In these countries, women's empowerment is consistently associated with worse outcomes for girls; in Cambodia, although the interaction with

child gender is weakly significant, women's empowerment is associated with better outcomes for girls. A strong association of IYCF outcomes with child gender does not emerge except for children's dietary diversity in Ghana and Mozambique, in which empowerment is associated with worse outcomes for girls. While cultural preference for boys is deeply embedded in many cultures, programs could be designed to negate this differential – for instance, through providing a food ration or nutritional supplement specifically for girls and providing behavior-change communication to mothers and fathers that emphasizes the need to treat children, regardless of gender, equally. The positive associations between gender equality and nutritional outcomes suggest that messaging around gender equality and nutrition needs to reach fathers as well.

Autonomy in production decisions and speaking in public reveal the fewest associations with nutritional outcomes. Autonomy in production may not be the most relevant to nutritional outcomes; Carlson et al. (2015) suggest that health care autonomy (not included in the WEAI measure) seems to be frequently identified with child's HAZ in the studies reviewed. Further light can be shed by Narayanan et al. (2019) and Heckert et al. (2019), who investigate which dimensions of empowerment are more important for women's and children's nutritional outcomes (Heckert et al., n.d.; Narayanan, Lentz, Fontana, De, & Kulkarni, 2019). Finally, whether one's ease or comfort in public speaking is empowering is context-specific; this indicator was dropped from the Cambodia results owing to the political sensitivity of this question.

Understanding which dimensions of autonomy result in the most health benefits for women and children could help focus public health interventions on improving the most important aspects of women's autonomy as immediate goals (Carlson et al., 2015). Although the WEAI measures empowerment, not autonomy, our findings suggest that program designers and policy makers can similarly prioritize interventions based on the dimensions of empowerment that are more closely linked to health and nutrition outcomes. This policy implication differs from that derived from previous analyses. Previously, the WEAI has been used to identify policy and programming priorities

by disaggregating the contribution of each indicator to women's disempowerment, identifying the top two or three contributors, and recommending that programs be designed to support empowerment in these specific areas (Malapit et al., 2015; Malapit & Quisumbing, 2015; Sraboni et al., 2014).The present analysis assessing all ten indicators finds that looking at the top two or three contributors to women's disempowerment provides little, if not potentially misguided, direction for improving nutritional outcomes at the household-, woman-, and child-levels. In comparing both analyses, we find that focusing on the top two contributors to disempowerment to guide prioritization of gender- and nutrition-sensitive agricultural programs would be misleading because different empowerment indicators matter for different nutritional outcomes and the results are largely country specific. The model with all 10 indicators provides a fuller picture of which indicators matter for which nutritional outcomes in a given context and reveals potential tradeoffs. It also suggests prime areas for policy and programming whenever overlap exists between a top contributor to disempowerment and a strong association between an indicator and positive nutritional outcomes. Our results suggest that interventions targeting the top contributors to disempowerment that could also potentially improve a large range of nutritional outcomes could be cost-effective. However, because our results are based on associations, not impact evaluations, gender- and nutrition-sensitive agricultural programs that address the top contributors to women's disempowerment would need to be rigorously evaluated both in terms of impact and cost-effectiveness to guide future programming.

References

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013a). The Women's Empowerment in Agriculture Index. *World Development*, *52*, 71–91. https://doi.org/10.1016/j.worlddev.2013.06.007

Carlson, G. J., Kordas, K., & Murray-Kolb, L. E. (2015). Associations between women's autonomy and child nutritional status: a review of the literature. *Maternal & Child Nutrition*, *11*(4), 452–482. https://doi.org/10.1111/mcn.12113

Cunningham, K., Ruel, M., Ferguson, E., & Uauy, R. (2015). Women's empowerment and child nutritional status in South Asia: a synthesis of the literature. *Maternal & Child Nutrition*, *11*(1), 1–19. https://doi.org/10.1111/mcn.12125

Davis, P., Tagoe-Darko, E., & Mukuria, A. (2003). *Water, Koko, and Appetite Complementary Feeding Practices in Kumasi, Ghana.* Retrieved from https://dhsprogram.com/pubs/pdf/QRS6/ComplementaryFeedinginGhana.pdf

Doss, C. (2014). If Women Hold Up Half the Sky, How Much of the World's Food Do They Produce? In *Gender in Agriculture* (pp. 69–88). https://doi.org/10.1007/978-94-017-8616-4_4

Food and Agriculture Organization of the United Nations. (n.d.). FAOSTAT Employment Indicators. Retrieved August 2, 2019, from http://www.fao.org/faostat/en/#data/OE

Gupta, S., Pingali, P., & Pinstrup-Andersen, P. (2019). Women's empowerment and nutrition status: The case of iron deficiency in India. *Food Policy*, *88*. https://doi.org/10.1016/j.foodpol.2019.101763

Heckert, J., Martinez, E. M., Seymour, G., Pereira, A., Malapit, H., Roy, S., … Team, G. A. and A. P. P. 2 (GAAP2) H. and N. S. (n.d.). *Development and validation of a health and nutrition module for the project-level Women's Empowerment in Agriculture Index (pro-WEAI)*.

Ibrahim, S., & Alkire, S. (2007). Agency and Empowerment: A Proposal for Internationally Comparable Indicators. *Oxford Development Studies*, *35*(4), 379–403. https://doi.org/10.1080/13600810701701897

Kabeer, N. (1999). Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment. *Development and Change*, *30*(3), 435–464. https://doi.org/10.1111/1467-7660.00125

Komatsu, H., Malapit, H., & S Theis. (2018). Does women's time in domestic work and agriculture affect women's and children's dietary diversity? Evidence from Bangladesh, Nepal, Cambodia, Ghana. *Food Policy*, *78*, 256–270. Retrieved from https://www.sciencedirect.com/science/article/pii/S0306919217305833

Malapit, H. J. L., Kadiyala, S., Quisumbing, A. R., Cunningham, K., & Tyagi, P. (2015). Women's Empowerment Mitigates the Negative Effects of Low Production Diversity on Maternal and Child Nutrition in Nepal. *The Journal of Development Studies*, *51*(8), 1097–1123. https://doi.org/10.1080/00220388.2015.1018904

Malapit, H. J. L., & Quisumbing, A. R. (2015). What dimensions of women's empowerment in agriculture matter for nutrition in Ghana? *Food Policy*, *52*, 54–63. https://doi.org/10.1016/j.foodpol.2015.02.003

Malapit, H. J. L., Sraboni, E., Quisumbing, A. R., & Ahmed, A. U. (2019). Intrahousehold empowerment gaps in agriculture and children's well-being in Bangladesh. *Development Policy Review*, *37*(2), 176–203. https://doi.org/10.1111/dpr.12374

Narayanan, S., Lentz, E., Fontana, M., De, A., & Kulkarni, B. (2019). Developing the Women's Empowerment in Nutrition Index in Two States of India. *Food Policy*. https://doi.org/10.1016/j.foodpol.2019.101780

Palacios-Lopez, A., Christiaensen, L., & Kilic, T. (2017). How much of the labor in African agriculture is provided by women? *Food Policy*, *67*, 52–63. https://doi.org/10.1016/j.foodpol.2016.09.017

Pratley, P. (2016, November 1). Associations between quantitative measures of women's empowerment and access to care and health status for mothers and their children: A systematic review of evidence from the developing world. *Social Science and Medicine*, Vol. 169, pp. 119–131. https://doi.org/10.1016/j.socscimed.2016.08.001

Quisumbing, A. R. (2003). *Household decisions, gender, and development: a synthesis of recent research.* Washington DC: International Food Policy Research Institute. Retrieved from https://www.cabdirect.org/cabdirect/abstract/20043095514

Ruel, M. T., & Alderman, H. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *The Lancet*, *382*(9891), 506. https://doi.org/10.1016/S0140-6736(13)60843-0

Santoso, M. V, Kerr, R. B., Hoddinott, J., Garigipati, P., Olmos, S., & Young, S. L. (2019). Role of Women's Empowerment in Child Nutrition Outcomes: A Systematic Review. *Advances in Nutrition*. https://doi.org/10.1093/advances/nmz056

Sraboni, E., Malapit, H. J., Quisumbing, A. R., & Ahmed, A. U. (2014). Women's Empowerment in Agriculture: What Role for Food Security in Bangladesh? *World Development*, *61*, 11–52. https://doi.org/10.1016/j.worlddev.2014.03.025

Sraboni, E., & Quisumbing, A. (2018). Women's empowerment in agriculture and dietary quality across the life course: Evidence from Bangladesh. *Food Policy*, *81*, 21–36. https://doi.org/10.1016/j.foodpol.2018.09.001

The World Bank. (n.d.-a). Agriculture, forestry, and fishing, value added (% of GDP) | Data. Retrieved August 2, 2019, from https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS

The World Bank. (n.d.-b). Employment in agriculture, female (% of female employment) (modeled ILO estimate) | Data. Retrieved August 2, 2019, from https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS?view=chart

The World Bank. (n.d.-c). GNI per capita, PPP (current international $) | Data. Retrieved August 2, 2019, from https://data.worldbank.org/indicator/ny.gnp.pcap.pp.cd

The World Bank. (n.d.-d). Rural poverty headcount ratio at national poverty lines (% of rural population) | Data. Retrieved August 2, 2019, from https://data.worldbank.org/indicator/SI.POV.RUHC

Yoong, J., Rabinovich, L., & Diepeveen, S. (2012). *The impact of economic resource transfers to women versus men: a systematic review*. Retrieved from http://www.fsnnetwork.org/sites/default/files/economictransfer2012yoong.pdf

Appendix Table 1**. Bangladesh WEAI indicators and household and women's nutritional outcomes**

	Household		Woman	
Key variable	HHS	HH dietary diversity	WDDS	Women's BMI
Model 3: 10 WEAI indicators				
# ag decisions	-0.010***	0.027**	-0.016	-0.002*
	(0.003)	(0.010)	(0.014)	(0.001)
# autonomy in production	-0.014***	0.018	-0.004	0.001
	(0.004)	(0.014)	(0.018)	(0.002)
# ag assets owned	-0.001	0.077***	-0.007	-0.004
	(0.008)	(0.026)	(0.034)	(0.003)
# ag assets with rights	-0.008	0.053***	0.032	-0.001
	(0.005)	(0.020)	(0.023)	(0.002)
# credit decisions	0.020***	-0.006	0.003	-0.001
	(0.005)	(0.017)	(0.023)	(0.002)
# income decisions	-0.004	0.025*	0.008	-0.004*
	(0.004)	(0.015)	(0.019)	(0.002)
# groups member of	0.045**	0.064	0.125*	-0.005
	(0.020)	(0.059)	(0.075)	(0.006)
# situations comfort speaking in public	0.005	0.050	0.027	0.002
	(0.015)	(0.049)	(0.060)	(0.005)
# hours worked per day	-0.007	0.007	0.019	-0.003*
	(0.005)	(0.013)	(0.018)	(0.002)
# satisfaction with leisure	-0.001	0.040***	0.020	0.002
	(0.003)	(0.010)	(0.014)	(0.001)
N	4,283	4,283	4,494	4,102

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Appendix Table 2. **Nepal WEAI indicators and household and maternal nutrition outcomes**

	Household	Woman	
Key Variables	HHS	WDDS	Women's BMI
Model 3: 10 WEAI indicators			
# ag decisions	-0.001	-0.048***	-0.000
	(0.002)	(0.013)	(0.002)
# autonomy in production	-0.005	0.030	0.003
	(0.004)	(0.028)	(0.003)
# ag assets owned	-0.007	-0.044**	-0.007***
	(0.005)	(0.020)	(0.002)
# ag assets with rights	-0.011***	-0.050***	-0.003
	(0.004)	(0.016)	(0.002)
# credit decisions	-0.001	-0.013	0.003
	(0.003)	(0.022)	(0.003)
# income decisions	-0.002	0.028	0.007***
	(0.003)	(0.018)	(0.002)
# groups member of	0.004	0.050	-0.017**
	(0.008)	(0.052)	(0.008)
# situations comfort speaking in public	-0.022***	0.108***	0.006
	(0.007)	(0.042)	(0.005)
# hours worked per day	-0.001	0.014	-0.003**
	(0.002)	(0.009)	(0.001)
# satisfaction with leisure	-0.002	0.092***	0.005*
	(0.003)	(0.022)	(0.003)
N	2,033	2,031	1,887

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. For Model 3 each of the 10 WEAI indicators was run separately. They are presented together for consolidation purposes.
Sample size for autonomy in production only includes those who reported joint decision-making due to an error in the skip pattern of the survey.

Appendix Table 3. **Cambodia WEAI indicators and household and maternal nutrition outcomes**

	Household	Woman	
Key variable	HHS	WDDS	Women's BMI
Model 3: 10 WEAI indicators			
# ag decisions	-0.003	-0.015	-0.000
	(0.004)	(0.031)	(0.002)
# autonomy in production	-0.006	-0.050	0.001
	(0.005)	(0.082)	(0.005)
# ag assets owned	-0.005*	-0.011	0.003
	(0.003)	(0.033)	(0.002)
# ag assets with rights	-0.002	0.012	0.003
	(0.003)	(0.035)	(0.003)
# credit decisions	0.002	-0.020	0.003
	(0.002)	(0.053)	(0.002)
# income decisions	-0.002	-0.023	0.001
	(0.002)	(0.029)	(0.002)
# groups member of	-0.006*	0.018	0.003
	(0.003)	(0.058)	(0.003)
# hours worked per day	-0.002	0.009	-0.001
	(0.003)	(0.019)	(0.001)
# satisfaction with leisure	-0.006	0.039	0.002
	(0.004)	(0.027)	(0.002)
N	1,923	2,800	2,285

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.
For Model 3 each of the 10 WEAI indicators was run separately. They are presented together for consolidation purposes.

Appendix Table 4. **Ghana WEAI indicators and household and maternal nutrition outcomes**

	Household		Woman	
Key variable	HHS	HH dietary diversity	WDDS	Women BMI
Model 3: 10 WEAI indicators				
# ag decisions	0.058***	-0.033	-0.027**	-0.001
	(0.015)	(0.021)	(0.012)	(0.002)
# autonomy in production	-0.101***	0.040	-0.078***	-0.006***
	(0.017)	(0.030)	(0.029)	(0.002)
# ag assets owned	0.101**	-0.162***	0.040	0.003
	(0.041)	(0.049)	(0.045)	(0.004)
# ag assets with rights	0.104***	-0.169***	-0.008	0.000
	(0.036)	(0.045)	(0.045)	(0.004)
# credit decisions	0.028	0.052	0.200***	-0.001
	(0.046)	(0.038)	(0.062)	(0.003)
# income decisions	-0.056*	0.000	-0.043	-0.001
	(0.029)	(0.031)	(0.030)	(0.003)
# groups member of	0.022	-0.029	0.020	-0.007
	(0.046)	(0.058)	(0.071)	(0.005)
# situations comfort speaking in public	-0.077	-0.168**	0.085	0.006
	(0.066)	(0.077)	(0.077)	(0.007)
# hours worked per day	0.006	0.013	-0.003	-0.003***
	(0.008)	(0.010)	(0.009)	(0.001)
# satisfaction with leisure	0.036*	-0.022	-0.010	0.000
	(0.020)	(0.027)	(0.024)	(0.002)
N	2,011	1,997	2,388	2,123

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.
For Model 3 each of the 10 WEAI indicators was run separately. They are presented together for consolidation purposes.

Appendix **Table 6.** Tanzania WEAI indicators and household and primary women's nutrition outcomes

	Household		Women	
Key variable	HHS	HH dietary diversity	WDDS	Women's BMI
Model 3: 10 WEAI indicators				
# ag decisions	-0.169***	-0.015	0.204**	0.011
	(0.062)	(0.079)	(0.078)	(0.008)
# autonomy in production	0.003	-0.046	0.007	0.010
	(0.042)	(0.062)	(0.096)	(0.013)
# ag assets owned	-0.141**	0.019	0.214***	0.005
	(0.057)	(0.077)	(0.076)	(0.013)
# ag assets with rights	-0.120**	0.040	0.168**	0.010
	(0.055)	(0.073)	(0.070)	(0.011)
# credit decisions	0.059	-0.003	0.060	-0.000
	(0.038)	(0.088)	(0.074)	(0.008)
# income decisions	0.065	-0.014	0.040	0.015*
	(0.049)	(0.063)	(0.077)	(0.008)
# groups member of	-0.064	0.268***	0.038	0.012
	(0.054)	(0.072)	(0.120)	(0.016)
# situations comfort speaking in public	-0.042	0.050	0.029	0.012
	(0.046)	(0.078)	(0.062)	(0.007)
# hours worked per day	-0.023	0.007	0.104***	-0.001
	(0.015)	(0.030)	(0.038)	(0.004)
# satisfaction with leisure	-0.010	0.004	-0.017	0.007
	(0.022)	(0.035)	(0.038)	(0.004)
N	249	249	238	179

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Standard errors in parentheses. For Model 3 each of the 10 WEAI indicators was run separately. They are presented together for consolidation purposes.

Appendix Table 7: **Bangladesh WEAI indicators, child anthropometric outcomes, and IYCF practices, selected coefficients**

	Anthropometric outcomes			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
Model 3: 10 WEAI indicators					
# ag decisions	0.040	-0.027	-0.014	-0.002	0.030
	(0.038)	(0.035)	(0.030)	(0.003)	(0.028)
# ag decisions x Girl	-0.037	0.069	0.038	0.005	0.009
	(0.050)	(0.047)	(0.041)	(0.006)	(0.041)
Girl	0.304*	-0.478**	-0.161	0.013	0.050
	(0.171)	(0.193)	(0.155)	(0.021)	(0.129)
# autonomy in production	-0.003	0.023	0.000	-0.002	-0.018
	(0.042)	(0.042)	(0.035)	(0.004)	(0.034)
# autonomy in production x Girl	0.024	-0.004	0.011	-0.001	0.041
	(0.050)	(0.061)	(0.050)	(0.005)	(0.047)
Girl	0.154	-0.288	-0.084	0.030	-0.018
	(0.175)	(0.181)	(0.135)	(0.019)	(0.122)
# ag assets owned	0.122	-0.077	0.011	-0.002	0.022
	(0.088)	(0.077)	(0.069)	(0.007)	(0.057)
# ag. assets owned x Girl	-0.112	0.032	-0.061	-0.005	0.019
	(0.127)	(0.147)	(0.106)	(0.014)	(0.091)
Girl	0.353*	-0.339	0.019	0.034	0.043
	(0.211)	(0.222)	(0.163)	(0.026)	(0.157)
# ag assets with rights	0.140**	-0.001	0.104*	-0.000	0.007
	(0.067)	(0.065)	(0.055)	(0.004)	(0.045)
# ag. assets with rights x Girl	-0.116	-0.009	-0.102	-0.000	-0.024
	(0.084)	(0.113)	(0.084)	(0.007)	(0.068)
Girl	0.450**	-0.264	0.158	0.022	0.139
	(0.221)	(0.244)	(0.186)	(0.019)	(0.169)
# credit decisions	-0.083	-0.019	-0.032	0.001	0.018
	(0.062)	(0.053)	(0.048)	(0.007)	(0.044)
# credit decisions x Girl	-0.003	0.077	0.013	0.007	0.051
	(0.086)	(0.081)	(0.076)	(0.011)	(0.076)
Girl	0.199	-0.385**	-0.079	0.020	0.009
	(0.157)	(0.166)	(0.138)	(0.016)	(0.145)
# income decisions	0.076	-0.028	0.015	0.003	0.056
	(0.054)	(0.045)	(0.045)	(0.003)	(0.038)
# income decisions x Girl	-0.114	0.100	0.027	0.001	0.019
	(0.072)	(0.066)	(0.063)	(0.008)	(0.063)
Girl	0.447**	-0.507**	-0.115	0.026	0.031
	(0.194)	(0.213)	(0.180)	(0.023)	(0.138)
# groups member of	0.275	0.020	0.296	0.038	-0.130
	(0.193)	(0.208)	(0.183)	(0.028)	(0.139)
# groups member of x Girl	-0.651**	-0.161	-0.642**	-0.023	0.079

	Anthropometric outcomes			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
	(0.309)	(0.285)	(0.248)	(0.037)	(0.204)
Girl	0.383**	-0.252*	0.118	0.034**	0.040
	(0.148)	(0.146)	(0.122)	(0.016)	(0.119)
# situations comfort speaking in public (0-3)	0.351**	-0.133	0.169	-0.006	0.144
	(0.156)	(0.176)	(0.136)	(0.010)	(0.142)
# situations comfort speaking in public x Girl	-0.437*	0.010	-0.330	-0.020	-0.017
	(0.230)	(0.255)	(0.205)	(0.028)	(0.214)
Girl	1.512**	-0.331	0.924	0.087	0.116
	(0.675)	(0.754)	(0.647)	(0.090)	(0.627)
# hours worked per day	-0.022	0.015	0.034	0.006	-0.028
	(0.041)	(0.044)	(0.040)	(0.004)	(0.037)
#hours worked per day x Girl	0.014	0.064	0.025	-0.005	0.005
	(0.044)	(0.073)	(0.054)	(0.005)	(0.045)
Girl	0.073	-0.901	-0.307	0.074	0.030
	(0.425)	(0.699)	(0.530)	(0.049)	(0.457)
# satisfaction with leisure (1-10)	-0.067**	0.106***	0.004	0.005*	-0.035
	(0.034)	(0.039)	(0.032)	(0.003)	(0.025)
#satisfaction with leisure x Girl	0.093*	-0.103*	0.014	-0.007	-0.008
	(0.048)	(0.055)	(0.050)	(0.005)	(0.039)
Girl	-0.276	0.232	-0.135	0.064**	0.104
	(0.313)	(0.301)	(0.268)	(0.032)	(0.226)
N	738	731	738	525	726

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Regressions were estimated separately for each of the 10 WEAI indicators, but coefficients on the indicators are presented together for compactness.

Appendix Table 8. **Nepal WEAI indicators, child anthropometric outcomes, and infant and young child feeding practices**

	Child anthropometrics			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
Model 3: 10 WEAI indicators					
# ag decisions	0.024	0.010	0.027	0.029	-0.016
	(0.026)	(0.026)	(0.025)	(0.018)	(0.023)
# ag decisions x Girl	-0.047	-0.041	-0.059*	-0.031	-0.024
	(0.033)	(0.032)	(0.031)	(0.024)	(0.031)
Girl	0.347***	0.127	0.283**	0.103	0.138
	(0.130)	(0.127)	(0.126)	(0.094)	(0.129)
# autonomy in production	0.041	0.023	0.082	-0.001	0.061
	(0.059)	(0.058)	(0.059)	(0.027)	(0.048)
# autonomy in production x Girl	0.016	0.008	0.002	0.050	0.098
	(0.075)	(0.074)	(0.074)	(0.056)	(0.073)
Girl	0.184**	-0.012	0.086	-0.022	0.011
	(0.079)	(0.079)	(0.074)	(0.067)	(0.076)
# ag assets owned	-0.044	0.046	-0.011	0.044	-0.029
	(0.040)	(0.041)	(0.041)	(0.034)	(0.036)
# ag. assets owned x Girl	-0.025	-0.065	-0.044	-0.059	0.006
	(0.053)	(0.052)	(0.050)	(0.044)	(0.051)
Girl	0.235**	0.084	0.154	0.086	0.054
	(0.100)	(0.105)	(0.100)	(0.088)	(0.104)
# ag assets with rights	-0.000	0.019	0.017	0.022	0.000
	(0.032)	(0.032)	(0.032)	(0.024)	(0.029)
# ag. assets with rights x Girl	-0.036	-0.042	-0.039	-0.019	-0.033
	(0.044)	(0.043)	(0.041)	(0.035)	(0.042)
Girl	0.256**	0.068	0.155	0.041	0.119
	(0.102)	(0.103)	(0.102)	(0.085)	(0.105)
# credit decisions	0.120**	-0.021	0.057	-0.018	0.035
	(0.051)	(0.042)	(0.042)	(0.030)	(0.042)
# credit decisions x Girl	-0.045	0.052	0.013	0.025	-0.041
	(0.066)	(0.061)	(0.059)	(0.045)	(0.064)
Girl	0.225***	-0.034	0.086	-0.006	0.083
	(0.077)	(0.077)	(0.072)	(0.064)	(0.076)
# income decisions	0.007	-0.013	0.007	0.040	-0.001
	(0.035)	(0.035)	(0.033)	(0.026)	(0.039)
# income decisions x Girl	0.013	0.045	0.057	-0.066	-0.019
	(0.052)	(0.048)	(0.046)	(0.042)	(0.052)
Girl	0.167	-0.090	-0.018	0.123	0.095
	(0.121)	(0.116)	(0.110)	(0.098)	(0.119)
# groups member of	-0.221	-0.019	-0.109	-0.222**	-0.048
	(0.141)	(0.141)	(0.125)	(0.098)	(0.139)
# groups member of x Girl	0.271	-0.135	0.011	0.173	0.086

	Child anthropometrics			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
	(0.190)	(0.182)	(0.165)	(0.142)	(0.204)
Girl	-0.580	0.375	0.054	-0.477	-0.184
	(0.544)	(0.522)	(0.473)	(0.398)	(0.590)
# situations comfort speaking in public	0.114	-0.119	-0.078	-0.100	0.145
	(0.093)	(0.089)	(0.083)	(0.080)	(0.089)
# situations comfort speaking in public x Girl	-0.046	0.115	0.114	-0.024	0.002
	(0.124)	(0.117)	(0.109)	(0.104)	(0.119)
Girl	0.351	-0.413	-0.320	0.094	0.051
	(0.443)	(0.416)	(0.387)	(0.368)	(0.427)
# hours worked per day	-0.002	0.022	0.006	0.002	0.025
	(0.018)	(0.017)	(0.017)	(0.014)	(0.017)
#hours worked per day x Girl	-0.001	0.002	-0.002	0.010	-0.015
	(0.025)	(0.024)	(0.022)	(0.017)	(0.025)
Girl	0.204	-0.021	0.108	-0.093	0.230
	(0.281)	(0.283)	(0.252)	(0.186)	(0.283)
# satisfaction with leisure	0.061	-0.036	0.048	-0.006	-0.000
	(0.051)	(0.044)	(0.048)	(0.032)	(0.046)
#satisfaction with leisure x Girl	0.032	0.057	0.018	0.016	0.072
	(0.064)	(0.058)	(0.060)	(0.049)	(0.065)
Girl	0.076	-0.215	0.021	-0.051	-0.195
	(0.245)	(0.216)	(0.227)	(0.192)	(0.244)
N	1,030	1,025	1,037	229	956

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Regressions were estimated separately for each of the 10 WEAI indicators, but coefficients on the indicators are presented together for compactness. Sample size for autonomy in production only includes those who reported joint decision-making due to an error in the skip pattern of the survey.

Appendix Table 9. **Cambodia WEAI indicators, child anthropometric outcomes, and infant and young child feeding practices**

	Child anthropometric outcomes			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
Model 3: 10 WEAI indicators					
# ag decisions	-0.075	0.016	-0.026	0.047	-0.062
	(0.054)	(0.053)	(0.047)	(0.029)	(0.049)
# ag decisions x Girl	0.124	-0.063	0.038	0.023	-0.011
	(0.080)	(0.087)	(0.062)	(0.053)	(0.068)
Girl	-0.308	0.418	0.064	-0.095	0.096
	(0.424)	(0.496)	(0.348)	(0.337)	(0.371)
# autonomy in production	-0.047	0.044	0.053	0.196	0.142
	(0.156)	(0.186)	(0.128)	(0.149)	(0.142)
# autonomy in production x Girl	0.020	0.029	-0.005	-0.143	-0.130
	(0.213)	(0.250)	(0.169)	(0.172)	(0.177)
Girl	0.289	-0.035	0.292	0.579	0.547
	(0.852)	(0.973)	(0.632)	(0.703)	(0.655)
# ag assets owned	0.015	-0.011	-0.004	-0.039	0.049
	(0.073)	(0.090)	(0.081)	(0.050)	(0.076)
# ag. assets owned x Girl	0.093	-0.047	0.043	0.101	-0.130
	(0.110)	(0.102)	(0.094)	(0.068)	(0.086)
Girl	0.075	0.223	0.134	-0.315	0.445*
	(0.354)	(0.337)	(0.286)	(0.246)	(0.257)
# ag assets with rights	0.047	-0.027	0.017	-0.073	0.037
	(0.058)	(0.088)	(0.070)	(0.051)	(0.073)
# ag. assets with rights x Girl	0.098	-0.090	0.008	0.135*	-0.128
	(0.107)	(0.094)	(0.084)	(0.069)	(0.086)
Girl	0.013	0.394	0.237	-0.452*	0.474*
	(0.395)	(0.328)	(0.299)	(0.256)	(0.257)
# credit decisions	-0.046	-0.113	-0.119	0.005	0.021
	(0.073)	(0.090)	(0.080)	(0.042)	(0.070)
# credit decisions x Girl	0.075	0.092	0.129	0.030	-0.052
	(0.098)	(0.097)	(0.094)	(0.053)	(0.093)
Girl	0.232	-0.091	0.037	-0.045	0.135
	(0.232)	(0.234)	(0.217)	(0.158)	(0.203)
# income decisions	-0.111	-0.038	-0.081	0.102**	-0.019
	(0.072)	(0.064)	(0.058)	(0.039)	(0.054)
# income decisions x Girl	-0.022	0.118	0.078	-0.003	0.022
	(0.119)	(0.118)	(0.127)	(0.069)	(0.082)
Girl	0.483	-0.587	-0.171	0.112	-0.078
	(0.635)	(0.706)	(0.696)	(0.406)	(0.451)
# groups member of	0.080	0.032	0.072	0.070	0.072
	(0.083)	(0.061)	(0.062)	(0.046)	(0.066)

	Child anthropometric outcomes			IYCF	
Key variable	HAZ	WHZ	WAZ	EBF	CDDS
# groups member of x Girl	-0.069	0.115	0.063	-0.011	0.045
	(0.145)	(0.105)	(0.109)	(0.078)	(0.100)
Girl	0.598	-0.309	0.058	0.068	-0.107
	(0.534)	(0.413)	(0.414)	(0.292)	(0.363)
# hours worked per day	-0.098**	-0.079*	-0.118***	-0.003	0.060
	(0.044)	(0.042)	(0.035)	(0.025)	(0.048)
#hours worked per day x Girl	0.058	0.024	0.036	-0.042	-0.024
	(0.060)	(0.058)	(0.053)	(0.048)	(0.065)
Girl	-0.266	-0.202	-0.150	0.469	0.318
	(0.621)	(0.665)	(0.580)	(0.531)	(0.721)
# satisfaction with leisure	0.078	0.075	0.109**	0.084***	0.008
	(0.058)	(0.052)	(0.046)	(0.022)	(0.050)
#satisfaction with leisure x Girl	0.037	-0.026	-0.005	-0.123**	0.024
	(0.083)	(0.068)	(0.070)	(0.059)	(0.075)
Girl	0.089	0.207	0.253	0.739**	-0.114
	(0.539)	(0.410)	(0.410)	(0.358)	(0.478)
N	353	353	353	78	365

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors in parentheses. Regressions were estimated separately for each of the 10 WEAI indicators, but coefficients on the indicators are presented together for compactness.

Appendix Table 10. **Ghana WEAI indicators, child anthropometric outcomes, and infant and young child feeding practices**

Key variable	HAZ (10)	WHZ (11)	WAZ (12)	EBF(6)	CDDS (7)
Model 3: 10 WEAI indicators					
# ag decisions	0.017	-0.037	-0.009	0.041**	0.021
	(0.059)	(0.043)	(0.035)	(0.018)	(0.041)
# ag decisions x Girl	-0.015	0.064	0.011	0.028	-0.161***
	(0.063)	(0.061)	(0.043)	(0.028)	(0.061)
Girl	0.254	-0.390	0.021	-0.118	0.709***
	(0.309)	(0.259)	(0.220)	(0.148)	(0.272)
# autonomy in production	-0.102	-0.054	-0.010	0.002	0.059
	(0.068)	(0.046)	(0.057)	(0.022)	(0.056)
# autonomy in production x Girl	0.035	-0.008	-0.095	-0.068**	-0.159**
	(0.125)	(0.067)	(0.076)	(0.031)	(0.070)
Girl	0.116	-0.131	0.372	0.255**	0.711**
	(0.419)	(0.224)	(0.298)	(0.108)	(0.300)
# ag assets owned	0.193	0.055	0.216**	-0.033	0.358***
	(0.144)	(0.104)	(0.102)	(0.048)	(0.111)
# ag. assets owned x Girl	-0.448*	0.145	-0.225	0.029	-0.443***
	(0.259)	(0.174)	(0.155)	(0.072)	(0.170)
Girl	0.517**	-0.271	0.232*	0.019	0.461**
	(0.228)	(0.193)	(0.140)	(0.100)	(0.202)
# ag assets with rights	0.166	0.050	0.158	-0.021	0.310***
	(0.132)	(0.087)	(0.098)	(0.045)	(0.108)
# ag. assets with rights x Girl	-0.276	0.114	-0.119	0.026	-0.389**
	(0.214)	(0.147)	(0.136)	(0.067)	(0.153)
Girl	0.424*	-0.271	0.160	0.013	0.458**
	(0.222)	(0.190)	(0.143)	(0.101)	(0.202)
# credit decisions	0.527***	0.044	0.240*	-0.086**	0.052
	(0.156)	(0.111)	(0.144)	(0.037)	(0.143)
# credit decisions x Girl	-0.760***	0.285	-0.269	0.020	0.019
	(0.204)	(0.238)	(0.173)	(0.079)	(0.183)
Girl	0.560***	-0.296*	0.189	0.012	0.173
	(0.195)	(0.161)	(0.147)	(0.089)	(0.176)
# income decisions	0.047	-0.023	-0.010	0.068**	0.085
	(0.108)	(0.077)	(0.090)	(0.034)	(0.080)
# income decisions x Girl	-0.185	0.133	-0.035	0.009	-0.275*
	(0.171)	(0.125)	(0.120)	(0.062)	(0.135)
Girl	0.507	-0.398	0.114	0.025	0.630**
	(0.321)	(0.263)	(0.249)	(0.138)	(0.266)
# groups member of	0.303**	0.104	0.150	-0.018	0.134
	(0.163)	(0.152)	(0.136)	(0.062)	(0.162)
# groups member of x Girl	-0.003	-0.254	-0.104	0.003	0.011
	(0.327)	(0.209)	(0.222)	(0.137)	(0.214)

Key variable	HAZ (10)	WHZ (11)	WAZ (12)	EBF(6)	CDDS (7)
Girl	0.243	0.535	0.359	0.036	0.160
	(0.933)	(0.677)	(0.643)	(0.369)	(0.609)
# situations comfort speaking in public	0.252	-0.062	0.305**	0.061	0.077
	(0.187)	(0.163)	(0.153)	(0.061)	(0.182)
# situations comfort speaking in public x Girl	-0.411	0.052	-0.504**	-0.037	0.024
	(0.287)	(0.193)	(0.231)	(0.092)	(0.250)
Girl	1.617*	-0.355	1.794**	0.166	0.098
	(0.949)	(0.634)	(0.745)	(0.329)	(0.893)
# hours worked per day	0.016	-0.037*	-0.027	-0.005	-0.011
	(0.036)	(0.019)	(0.017)	(0.013)	(0.027)
#hours worked per day x Girl	-0.039	-0.009	0.018	0.011	0.019
	(0.046)	(0.030)	(0.024)	(0.015)	(0.036)
Girl	0.629	-0.055	-0.123	-0.071	-0.030
	(0.564)	(0.394)	(0.303)	(0.177)	(0.430)
# satisfaction with leisure	0.015	0.069	0.032	0.022	-0.064
	(0.065)	(0.053)	(0.045)	(0.024)	(0.054)
#satisfaction with leisure x Girl	0.011	-0.075	0.030	-0.020	0.079
	(0.114)	(0.070)	(0.088)	(0.045)	(0.073)
Girl	0.139	0.321	-0.125	0.173	-0.343
	(0.800)	(0.488)	(0.644)	(0.321)	(0.509)
N	638	628	676	180	490

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors in parentheses. Regressions were estimated separately for each of the 10 WEAI indicators, but coefficients on the indicators are presented together for compactness.

Appendix Table 11**. Mozambique WEAI indicators and child dietary diversity score**

Key variable	CDDS (3)
Model 3: 10 WEAI indicators	
# ag decisions	0.078
	(0.057)
# ag decisions x Girl	-0.029
	(0.086)
Girl	0.020
	(0.226)
# autonomy in production	-0.063
	(0.083)
# autonomy in production x Girl	0.019
	(0.117)
Girl	-0.076
	(0.255)
# ag assets owned	0.217**
	(0.083)
# ag. assets owned x Girl	-0.247**
	(0.120)
Girl	0.518
	(0.314)
# ag assets with rights	0.226***
	(0.073)
# ag. assets with rights x Girl	-0.194
	(0.122)
Girl	0.407
	(0.336)
# credit decisions	-0.177
	(0.150)
# credit decisions x Girl	0.214
	(0.246)
Girl	-0.083
	(0.128)
# income decisions	0.049
	(0.090)
# income decisions x Girl	-0.077
	(0.133)
Girl	0.089
	(0.256)
# groups member of	1.015*
	(0.568)
# groups member of x Girl	-0.629
	(0.722)
Girl	0.598

Key variable	CDDS (3)
	(0.774)
# situations comfort speaking in public	0.164
	(0.121)
# situations comfort speaking in public x Girl	-0.192
	(0.150)
Girl	0.302
	(0.266)
# hours worked per day	0.860***
	(0.255)
#hours worked per day x Girl	-0.730**
	(0.328)
Girl	0.107
	(0.143)
# satisfaction with leisure	0.025
	(0.043)
#satisfaction with leisure x Girl	-0.006
	(0.063)
Girl	-0.006
	(0.478)
N	310

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors in parentheses. Regressions were estimated separately for each of the 10 WEAI indicators, but coefficients on the indicators are presented together for compactness.

ALL IFPRI DISCUSSION PAPERS

All discussion papers are available **here**

They can be downloaded free of charge

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
www.ifpri.org

IFPRI HEADQUARTERS
1201 Eye Street, NW
Washington, DC 20005 USA
Tel.: +1-202-862-5600
Fax: +1-202-862-5606
Email: ifpri@cgiar.org