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Building Strong & Smart Families

Homestead Food Production and Maternal and Child Dietary Diversity in Nepal: Variations in Associations by Season and Agroecological Zone

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Background: Agriculture, Nutrition and Diets in Nepal

- Under-nutrition reducing but the prevalence : stunting, wasting, low BMI, and anemia remains high
- Issue: Diets lack diversity and micronutrient quality- mostly poor, DAG households
- Agriculture source of food but how agriculture contributes to nutrition-limited evidence/work
- Linking HFP and nutrition growing but study findings vary-Bangladesh, Nepal, Africa
- No studies assessed effects of HFP on MDD along with seasonal variation



Background: Suaahara

- A large scale multi-sectoral integrated nutrition program (2016-2021) funded by USAID to address care, health and food-major determinants of undernutrition in 40 districts of Nepal
- Household food production: Vegetable gardening for Plant source micro nutrients (vit, minerals) to poultry rearing for Animal source foods (ASF): **EHFP** integrated with BCC, health, wash and nutrition education





Suaahara II

Improve the nutritional status of women and children <5 years

Improved Household Nutrition and Health Behaviors

Increased Use of Quality Nutrition and Health Services by Women and Children

Improved Access to Diverse and Nutrient-Rich Foods by Women and Children

Accelerated Roll-Out of Multi-sector Nutrition Plan through Strengthened Local Governance

CROSS CUTTING THEMES

Public Private Partnerships (PPPs)

Gender Equality and Social Inclusion (GESI)

Innovative Grants Program (IGP)

Emergency Preparedness and Response Plan (ERPP)

Monitoring Evaluation and Learning

Study aim and primary explanatory and outcome variables

To examine associations between degree of HFP participation and dietary diversity among mothers and children under 2 years ...and also variations in these associations by season and agro-ecological zone (mountains, and *terai*)

HFP participation:

- received veg seeds
- received chicks
- received technical support
- participated in HFP training
- participated in HFP beneficiary groups

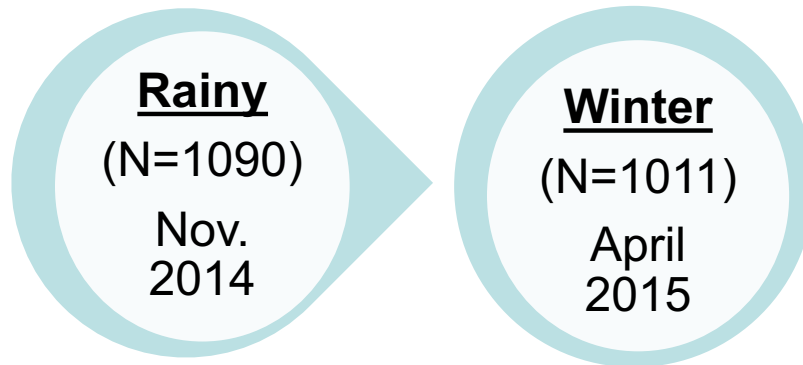
Dietary diversity

- Child: 7 food groups
- Women: 10 food groups (WDDS)

Study design and methodology

Household seasonal monitoring survey: 2929 program beneficiaries interviewed from three corresponding agricultural seasons; dry-rainy-winter(2014-15)

Analysis limited in the rainy and winter season to maintain consistency across the seasons:



stratified
multistage
cluster
sampling

Systematic
sampling
techniques:
HHs

Data analysis: Descriptive statistics; bivariate and multivariable analyses were done to examine the relationship between participation in EHFP and maternal and child dietary diversity and variations by season and AEZ.

Results: Maternal dietary diversity

Food Groups (%)	Rainy		Winter			
	Mountain (N=821)	Terai (N=736)	Mountain (N=273)	Terai (N=278)		
Starchy staples	100.0	100.0	99.0	100.0		
Beans and peas	99.0	99.6	97.6	99.3		
Nuts and seeds	21.6	24.2	4.2	20.1		
Eggs	44.9	53.3	53.3	69.1		
Dairy products	65.4	63.2	71.2	57.9		
Flesh foods	71.3	73.4	73.8	76.6		
Vitamin A rich dark green, leafy vegetables	93.9	93.8	88.8	90.3		
Other vitamin A-rich fruits & vegetables	51.0	50.3	31.2	61.2		
Other vegetables	83.8	84.0	81.0	99.3		
Other fruits	70.3	67.4	47.8	77.3		
Mean dietary diversity score (1-10)	7.0 (1.6)	7.0 (1.7)	6.5 (1.6)	7.5 (1.5)		

Results: Child dietary diversity

7 Food Groups	Rainy		Winter	
	Mountain (N=545)	Terai (N=167)	Mountain (N=307)	Terai (N=241)
	%/	%/	%/	%/
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Starchy staples	98.9	98.8	98.0	100.0
Beans, peas, nuts and seeds	95.2	97.6	91.9	95.0
Eggs	52.7	56.3	52.4	71.8
Dairy products	65.9	62.3	77.2	59.8
Flesh foods	59.4	69.5	57.3	58.9
Vitamin A rich dark green, leafy vegetables, other vitamin A-rich fruits & vegetables	87.9	89.2	82.7	84.6
Other fruits and vegetables	84.4	86.8	69.4	97.9
Adequate dietary diversity (4 or more of 7 food groups) (%)	91.9	93.4	87.0	93.8
Mean dietary diversity score (1-7)	5.4(1.3)	5.6(1.3)	5.3(1.6)	5.6(1.3)

Results: HFP participation and maternal dietary diversity

	Maternal							
	Rainy				Winter			
	Mountain (N=819)		Terai (N=271)		Mountain (N=734)		Terai (N=277)	
	β	P	β	P	β	P	β	P
Participated in agriculture and livestock training from Suaahara: ever	0.00		-0.01		0.02		0.08	
Received chicks from Suaahara: ever	0.08	*	-0.01		0.10	**	0.05	
Received seasonal seeds from Suaahara: in the previous season	0.00		-0.02		0.07		-	0.01
Received technical support by Suaahara staff in the previous season	-		0.04		0.05		0.19	**
Participated in HFP beneficiary group meeting: in the previous season	0.02		0.10		0.14	***	0.19	**
Homestead Food Production: composite score of participation in 5 key activities	0.03	■	0.05	■	0.12	**	0.24	**
								*

We controlled for the following confounders: Household caste, household size, household number of children <5 years, household distance to nearest market, household member in foreign country as migrant labor, maternal age, maternal education, districts of the survey participants. $P \leq 0.05$; ** $P \leq 0.01$, and *** $P \leq 0.001$

Results: HFP participation and child dietary diversity

	Child (6-23 months)							
	Rainy				Winter			
	Mountain (N=359)		Terai (N=140)		Mountain (N=278)		Terai (N=217)	
	β	P	β	P	β	P	β	P
Participated in agriculture and livestock training from Suaahara: ever	-0.05		-		-		-	
			0.09		0.10		0.01	
Received chicks from Suaahara: ever	0.01		-		0.02		0.18	**
			0.12					
Received seasonal seeds from Suaahara: in the previous season	0.00		-		-		-	
			0.06		0.08		0.07	
Received technical support by Suaahara staff in the previous season	0.08		0.06		-		0.31	***
					0.07			
Participated in HFP beneficiary group meeting: in the previous season	0.07		0.09		0.06		0.31	***
Homestead Food Production: composite score of participation in 5 key activities	0.05		-		-		0.35	***
			0.04		0.06			

We controlled for the following confounders: Household caste, household size, household number of children <5 years, household distance to nearest market, household member in foreign country as migrant labor, household distance to nearest market, household land size, maternal age, maternal education, child sex, districts of survey participants. $P \leq 0.05$; ** $P \leq 0.01$, and *** $P \leq 0.001$

Discussions and conclusions

- HFP participation may play a more important dietary role in the winter season than in the rainy season for both mountain and *terai* districts
- A difference was seen by AEZ, but only during the winter season. Little to no difference was seen in dietary diversity between the mountains and the *terai* during the rainy season but the differences in the winter season were quite pronounced.... Is it because of the dryness of the winter months, remoteness, limited markets in mountains?
- HFP programs, and similar agriculture/nutrition interventions, should be carefully designed, implemented, and evaluated to examine variation by context including place and time.
- A homogenous/blanket approach even within one country may not be the best approach



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