GROWTH & HEALTH OF RURAL CHILDREN IN 3 DISTRICTS OF NEPAL: EFFECT OF A COMMUNITY DEVELOPMENT INTERVENTION OVER 48 MONTHS

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BACKGROUND

Economic growth and poverty reduction are not always sufficient to improve child health and nutritional status. Heifer International, a global NGO, focuses on the introduction of livestock and related training as tools for poverty alleviation, citizen empowerment, and community development. Although these activities do not directly address child health or nutrition, Heifer recognizes that these are vital cornerstones of community development. Therefore, Heifer International Nepal conducted a 4-year longitudinal randomized controlled trial to evaluate the effects of its programs on these important outcomes.

AIMS

(1) systematically assess longitudinal effects of Heifer activities on child health/nutritional status

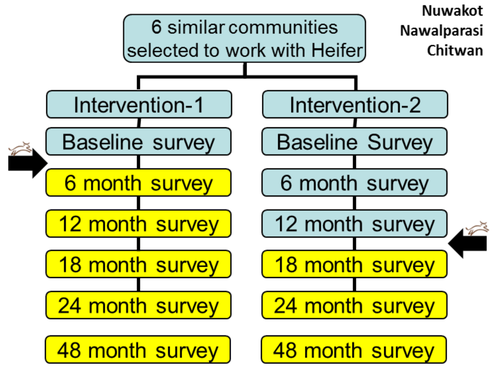
(2) delineate characteristics of families and children affecting these (and other) outcomes.

METHODS

- Longitudinal randomized controlled trial
- Questionnaire & anthropometry

Land
Animals (FAO)
SES (DHS)
Income
Food variety (WHO)

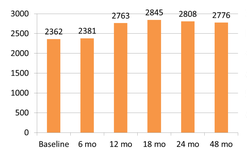
→ Child growth, Child health, (Child diet)



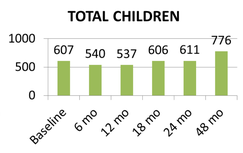
Statistical analysis: t test, ANOVA, X^2, Spearman correlations, mixed effects regression (Stata xmixed) [child age, gender, household location, animal score, & duration of exposure to the Intervention as fixed effects; time point & child data as random effects]

RESULTS

Enrollment



3,192 individuals
M=F~
431 households
Av HH # members: 6.7
98% home owners
Age 0-92 yrs (av 22 yrs)



Increase in income and SES

	Change from baseline to 48 months		
M±SE	Income (NPR)	Income per HH member (NPR)	Socio-economic score
All HH	112,586±8032	15,112±1105	0.407±05
INT-1	110,252±10564	15,534±1397	0.352±06
INT-2	115,141±12254	14,664±1734	0.463±06
	Change per month of participation in Heifer activities		
All HH	2727±200	364±27	0.010±.001
INT-1	2296±275*	323±38	0.007±001^
INT-2	3198±288*	407±39	0.012±001^

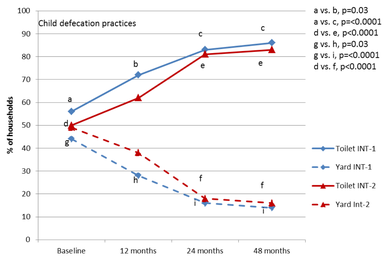
*p=0.02 ^p=0.01

Improvements in income & SES related to women's level of education

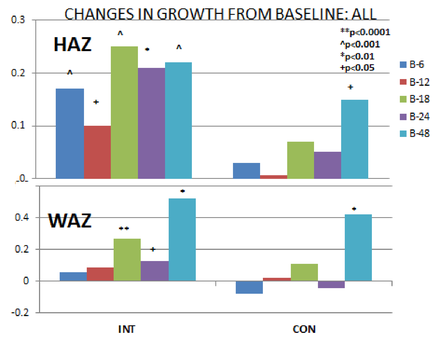
Education - SES			
	ALL	INT -1	INT-2
B	.1475 (.004)		
24	.1930 (.0004)	.1850 (.016)	.2064 (.008)
48	.3354 (.0000)	.2777 (.0001)	.4026 (.0000)
Education- Δ SES			
B-24	.0948 (NS)		
B-48	.2324 (.0000)	.1640 (.03)	.3000 (.0001)
Education - Δ income			
B-24	.0870 (NS)		
B-48	.2093 (.0001)	.2992 (.0001)	.1106 (NS)

Spearman correlations (p value)

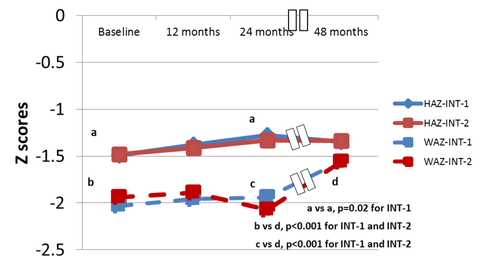
Improvement in HH hygiene practices



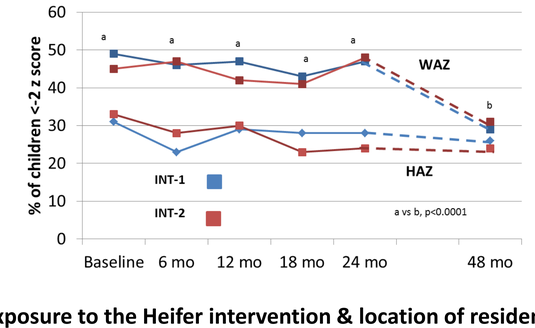
Children in INT-1 group had more improvement in WAZ and HAZ from baseline (matched pairs)



Children's WAZ score improved at 48 months



The % of underweight children decreased by ~20%, but stunting did not improve



HAZ was related to # of months of exposure to the Heifer intervention & location of residence (Terai vs. Hills); WAZ related to location (# months of exposure borderline)

HAZ	Coef.	Std. Err.	z	P>|z|	[95% Conf. Int.]	
Treatmo						
12	.1682512	.0702504	2.40	0.017	.030563	.3059395
24	.2928332	.1092015	2.68	0.007	.0788022	.5068642
36	.1697443	.1302458	1.30	0.192	-.0855329	.4250214
48	.2456858	.1487939	1.65	0.099	-.0459449	.5373165
Age	-.0022038	.0026104	-0.84	0.399	-.0073201	.0029126
Bsex	.106217	.094102	1.13	0.259	-.0782196	.2906536
Animal	.0205923	.0189589	1.09	0.277	-.0165665	.0577511
Terai	.7182259	.0980147	7.33	0.000	.5261205	.9103312
_cons	-1.997065	.1929462	-10.35	0.000	-2.375233	-1.618898

WAZ	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Treatmo						
12	-.0324684	.0680532	-0.48	0.633	-.1658502	.1009135
24	.0119415	.1062305	0.11	0.910	-.1962665	.2201495
36	.2500753	.1297501	1.93	0.054	-.0042302	.5043809
48	.2695864	.1492584	1.81	r 0.071	-.0229548	.5621276
Age	.0032345	.0026639	1.21	0.225	-.0019866	.0084556
Bsex	.0196233	.0983988	0.20	0.842	-.1732348	.2124815
Animal	-.0060236	.0184188	-0.33	0.744	-.0421237	.0300766
Terai	.3694259	.1021678	3.62	0.000	.1691808	.569671
_cons	-2.307691	.1993928	-11.57	0.000	-2.698494	-1.916888

CONCLUSIONS

- A livestock-based community development intervention was associated with improved child anthropometry
- Improved HAZ related to the duration of exposure to the Heifer intervention
- INT-1 children showed earlier and larger improvements in both height and weight
- Improvements in weight appeared in the latter phase of the intervention
- Many factors interact to influence child growth
- Family clustering and other household characteristics (such as women's educational level) likely affect these and other outcomes of community development activities

Special thanks to all the participating families

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