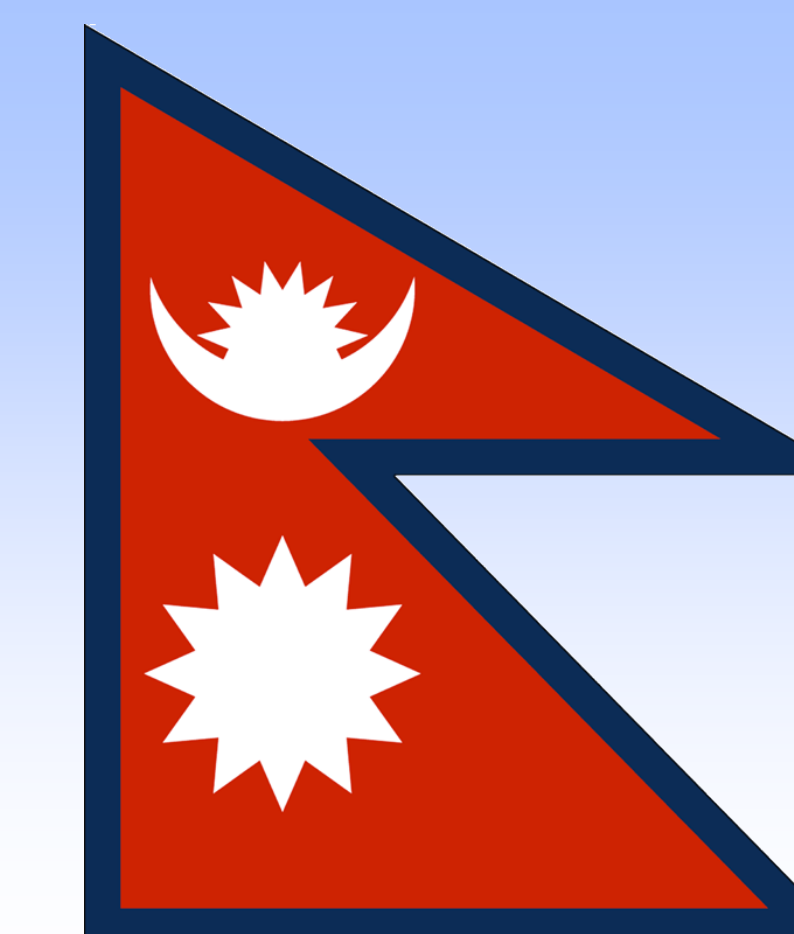# Women's Empowerment & Child Nutrition Outcomes in Nepal
Evidence Using Nationally Representative Data from Nepal

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Summary

We analyze data from the 2011 Nepal Demographic and Health Survey in order to determine the relationship between women's empowerment and child nutritional outcomes in Nepal.

More specifically, dimensions of women's empowerment are examined, including indicators that relate to decision-making power, mobility, and attitudes toward negotiating safe sex, as well as the age at marriage and the age differential. All models in the analysis control for maternal height, wealth, education, region and the age and sex of the child.

Ultimately this analysis shows that while women's empowerment in Nepal correlates with improved dietary diversity for children, it is not associated with reduced odds of stunting for children under five. Furthermore the largest predictor of improving stunting is wealth status, while mothers with higher levels of education tend to have children with better dietary diversity.

Though further research is needed, these preliminary findings translate into clear policy implications that relate to increased investments in income generating livelihoods and women's education.

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Context

Nepal has made a significant progress in improvement of child nutritional status. For example, stunting (less than -2D scores) decreased from 50 per cent in 2006 to 41 percent in 2011 among children under five. However, Nepal still fares poorly in the indicator as it ranks in the top 21 countries with highest prevalence of child stunting (DHS 2011).

Prevalence of Child Stunting
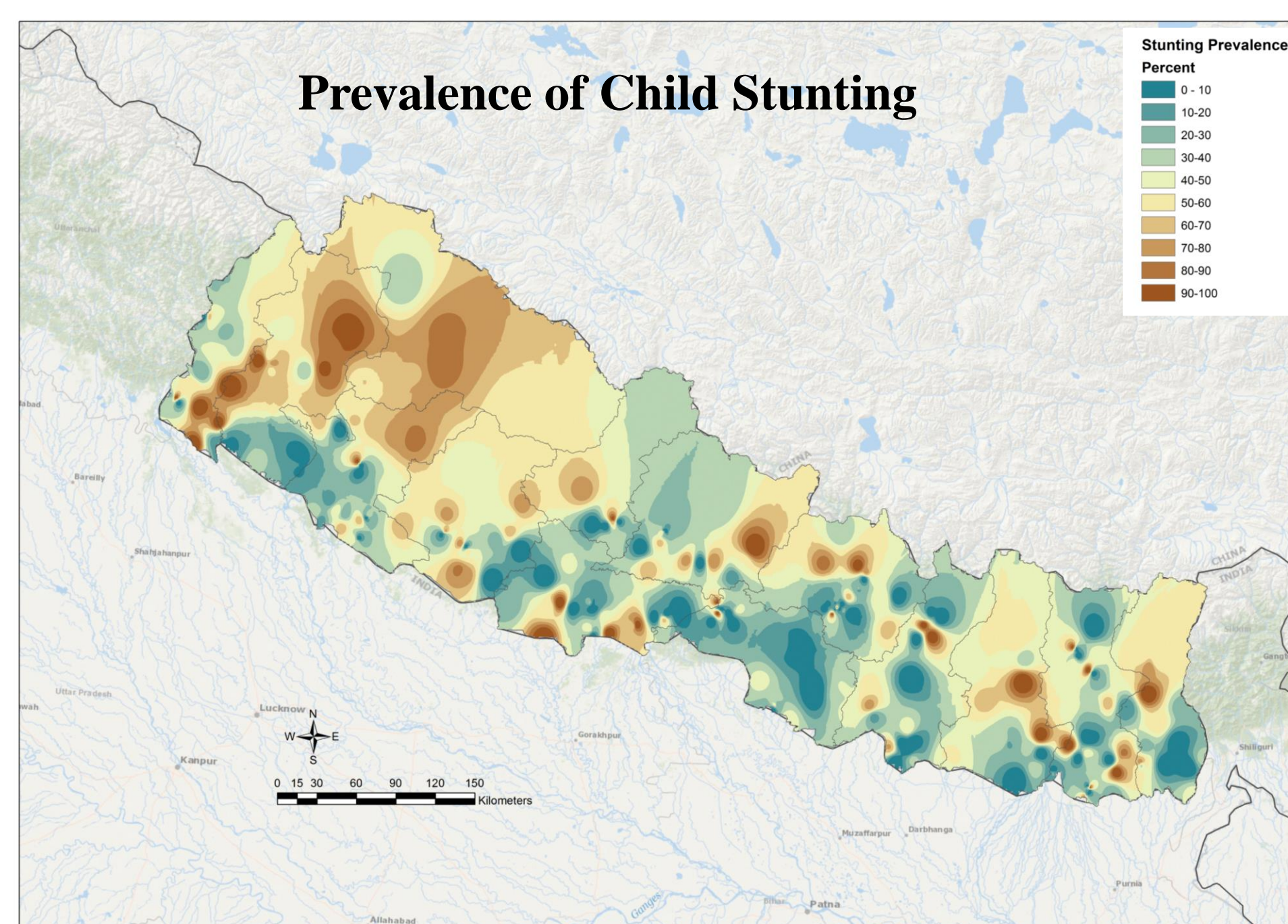
The UNICEF framework for malnutrition (1990) provides a strong basis to make the case of women's status influencing children's nutritional status. A link between maternal nutrition and child nutrition is well established; mothers with better nutritional status are more likely to transfer the same status to their children. Women's education and status, or more broadly women's empowerment, has shown to play a major role in mediating nutritional status of children via women's decision-making in providing adequate childcare and accessing health services per se.

Methods

Our econometric specification was modeled after an analysis conducted by the International Food Policy Research Institute (IFPRI) by Bhagowalia et al. (2012) that estimated the contribution of women's empowerment dimensions and determinants on child nutrition indicators in Bangladesh. Using a similar basic model, considerations were made to contextualize each component in the Nepali context.

The model of analysis is as follows:

$$Y= \beta_0+ \beta_1 WE + \beta_2 H + \beta_3 K + e$$

Where:
- **Y** child nutrition outcomes (stunting or minimum dietary diversity)

- **WE** a vector of women's empowerment indices spanning decision-making, mobility and attitudes

- **H** a vector of household characteristics, including socioeconomic, maternal height and region variables

- **K** includes child control variables, namely the child's age and sex

Table 1: Sample characteristics including key variables and their description						
Variable	N	Mean	Std. Dev.	Min	Max	Description
Child Attributes						
Age in Months	1366	32.00	15.46	6	59	Continuous
Height-for-Age Z-score	1333	-1.82	1.35	-5.93	3.02	Continuous, -6 - +6
Stunting Prevalence	1333	.45	.50	0	1	Binary, 0-1
Minimum dietary diversity	454	.16	.37	0	1	Binary, 0-1
Mother's Attributes						
Height (cm)	1359	151.11	5.41	134.3	182.8	Continuous
Age at first marriage	1366	17.46	3.27	10	36	Continuous
Age differential (% of husband's age)	1366	.87	.12	.46	1.3	Continuous, proportion
Participation in Decision-making	1353	1.53	1.24	0	3	Additive index, ordinal, 0-3
Mobility permission (health center)	1366	.82	.39	0	1	Binary, 0-1
Attitudes towards negotiating safe sex	1349	1.68	.56	0	2	Additive index, ordinal, 0-2
Household Attributes						
Highest education level (mother's)	1366			0	3	Categorical, 0-3
None	687	50.29%				
Primary	245	17.94%				
Secondary	351	25.70%				
Higher	83	6.08%				
Wealth Index	1366			0	5	Categorical, 0-5
Poorest	452	33.09%				
Poorer	258	18.89%				
Middle	230	16.84%				
Richer	187	13.69%				
Richest	239	17.50%				

Source: NDHS 2011, authors' calculations.

Results & Conclusions

Table 2: Predictions on Child Minimum Dietary Diversity from Women's Empowerment Variables and Covariates (N=2409)		
Dimensions and Determinants of Empowerment	Crude Odds Ratio	Adjusted Odds Ratio
Participation in decision-making (number of decisions) N=2400		
0	Dummy	0) Dummy
1	1.43 (.56, 3.63)	1) 1.32(.51, 3.48)
2	2.47 (1.03, 5.94) *	2) 2.40(.93, 6.17)
3	1.60 (.65, 3.92)	3) 1.26(.40, 3.94)
Mobility permission (health center)	.99 (.44, 2.18)	.51 (.19, 1.34)
Attitudes towards negotiating safe sex N=2405	3.41 (1.30, 8.92) *	2.27 (.91, 5.66)
Age differential (% of husband's age)	1.40 (0.81, 24.25)	86 (.05, 15.18)
Age at first marriage	1.12 (1.04, 1.21) *	1.03 (.94, 1.12)
Control Variables		
For adjusted model, results are presented for "Attitudes towards negotiating safe sex" +		
Education level		
None	Dummy	Dummy
Primary	4.39 (1.44, 13.43) *	3.62 (1.15, 11.47)*
Secondary	5.33 (2.46, 11.54) *	3.49 (1.43,8.48)*
Higher	7.91 (2.41, 25.89) *	4.76 (1.14,19.81)*
Wealth		
Poorest	Dummy	Dummy
Poorer	1.96 (.72, 5.30)	1.83 (.60, 5.57)
Middle	1.53 (.50, 4.72)	1.15 (.34, 3.59)
Richer	3.57 (1.38, 9.23) *	2.47 (.79,7.72)
Richest	4.31 (1.67, 11.12) *	2.38 (.68, 8.35)
Child's age	1.03 (.97, 1.10)	1.06 (.99, 1.14)
Child's sex	.78 (.41, 1.46)	.86 (.41, 1.78)
Regional Control++	Y	Y

Notes:
Statistical significance is noted as * (p≤0.05).
+ For the results of each adjusted model, see Table A.2 in the Appendix.
++ Results were controlled for the 13 ecological-development regions.
Source: NDHS 2011, authors' calculation.
Crude models based on the same sample sizes as adjusted model so OR's can be compared.

Ultimately this analysis demonstrated that in Nepal, women's empowerment measures are not associated with reduced odds of stunting, but do correlate with improved diets for children. With higher wealth status as the main determinant of reducing the likelihood of stunting, and higher educational attainment by mothers associated with improved dietary diversity, there are clear policy implications.

The importance of gender-specific economic development and female education is critical. With the majority of the population below the poverty line, it is clear that economic access to adequate food is taking a toll on children in Nepal. Development efforts that spur economic growth and provide opportunities for women will enhance the paradigm shift of gender dynamics in Nepal as well as improve food security and nutrition for children. Similarly, it is recommended that female education be prioritized, as the maternal role in diet selection is significant.