

# Remittances, paternal migration, and child growth in Nepal

Akriti Singh

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# Outline

- **Background:** migration, remittances and undernutrition in Nepal
- **Methodology:** data source, analysis
- **Results:** background characteristics, characteristics of migrants, characteristics of children, associations
- **Limitations**
- **Conclusions**

## Remittance growth slows to 7.7 percent in 2015-16

- PRITHVI MAN SHRESTHA, Kathmandu



### Cash outflow surpasses inflow amid slashed remittance

*Balance of payments posts deficit of Rs 2.1b first time in two years*

- RUPAK D SHARMA, Kathmandu



## How to spend it

*Govt should devise policies to make best use of remittances*

### Is almost all remittance spent on consumption? ... Maybe not

*28 percent of money sent from abroad is saved, says NRB report*

- RUPAK D SHARMA, Kathmandu

## Malaysia top remittance sending country to Nepal

- BIBEK SUBEDI, Kathmandu

TOP 16 REMITTANCE SENDERS (FIRST 11 MONTHS)	
Country	Amount
Malaysia	Rs132.75 billion
USA	Rs110.03 billion
Qatar	Rs76.54 billion
Japan	Rs73.55 billion
India	Rs63.38 billion
Saudi Arabia	Rs62.79 billion
UAE	Rs17.34 billion
UK	Rs9.56 billion

## Free-visa, free-ticket

*Govt didn't consider all formal and informal institutions active in the migration process while formulating the policy*

- HIMALAYA KHAREL, MOHAMMAD AYUB, BANDITA SIJAPATI

## 30 Nepali migrants stranded in UAE appeal for rescue

- HOM KARKI, Kathmandu

## Stranded Nepali migrant workers in Saudi implore for help

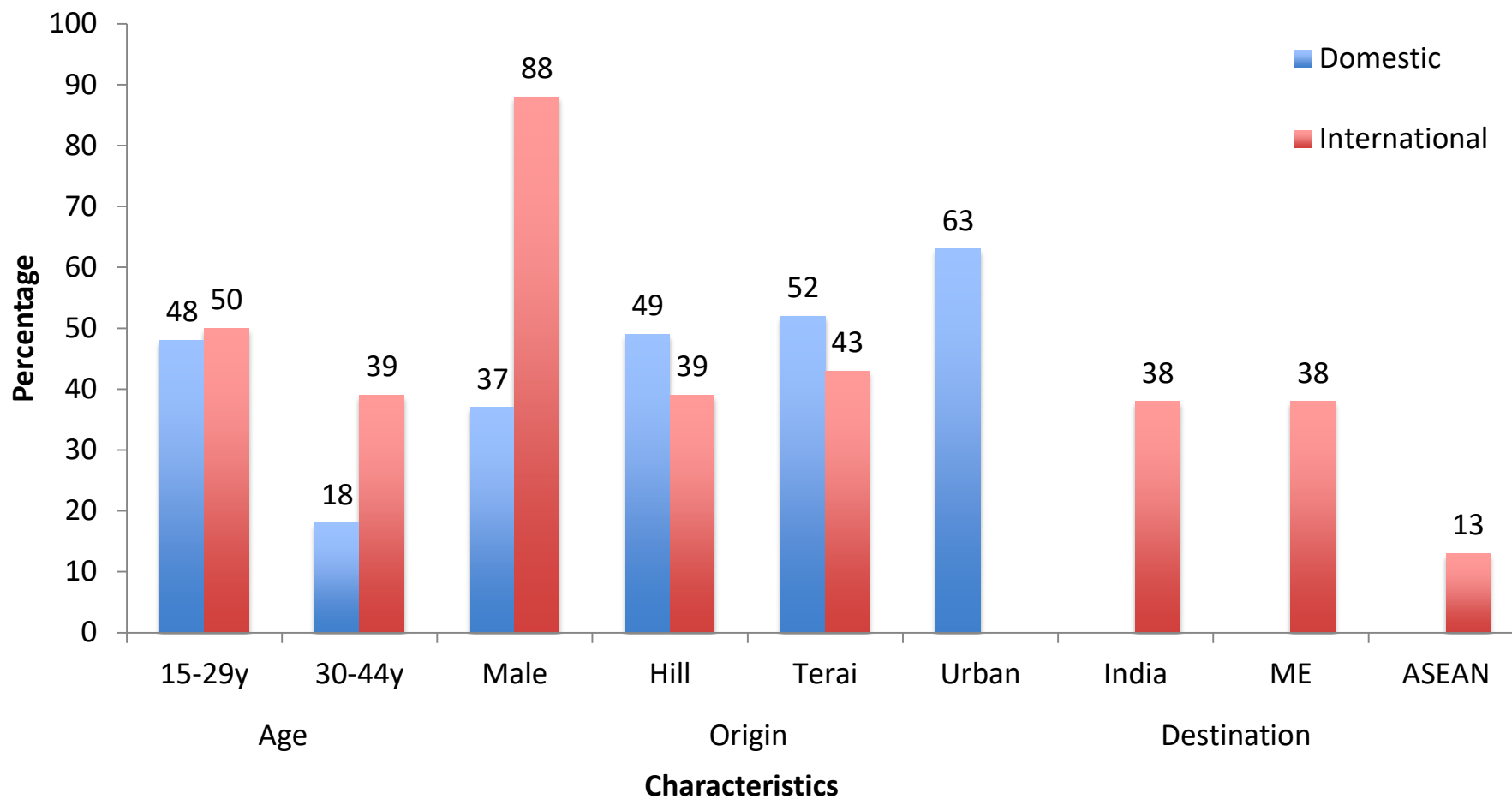
Dammam (Saudi Arabia)

## Over half of migrant workers from Tarai

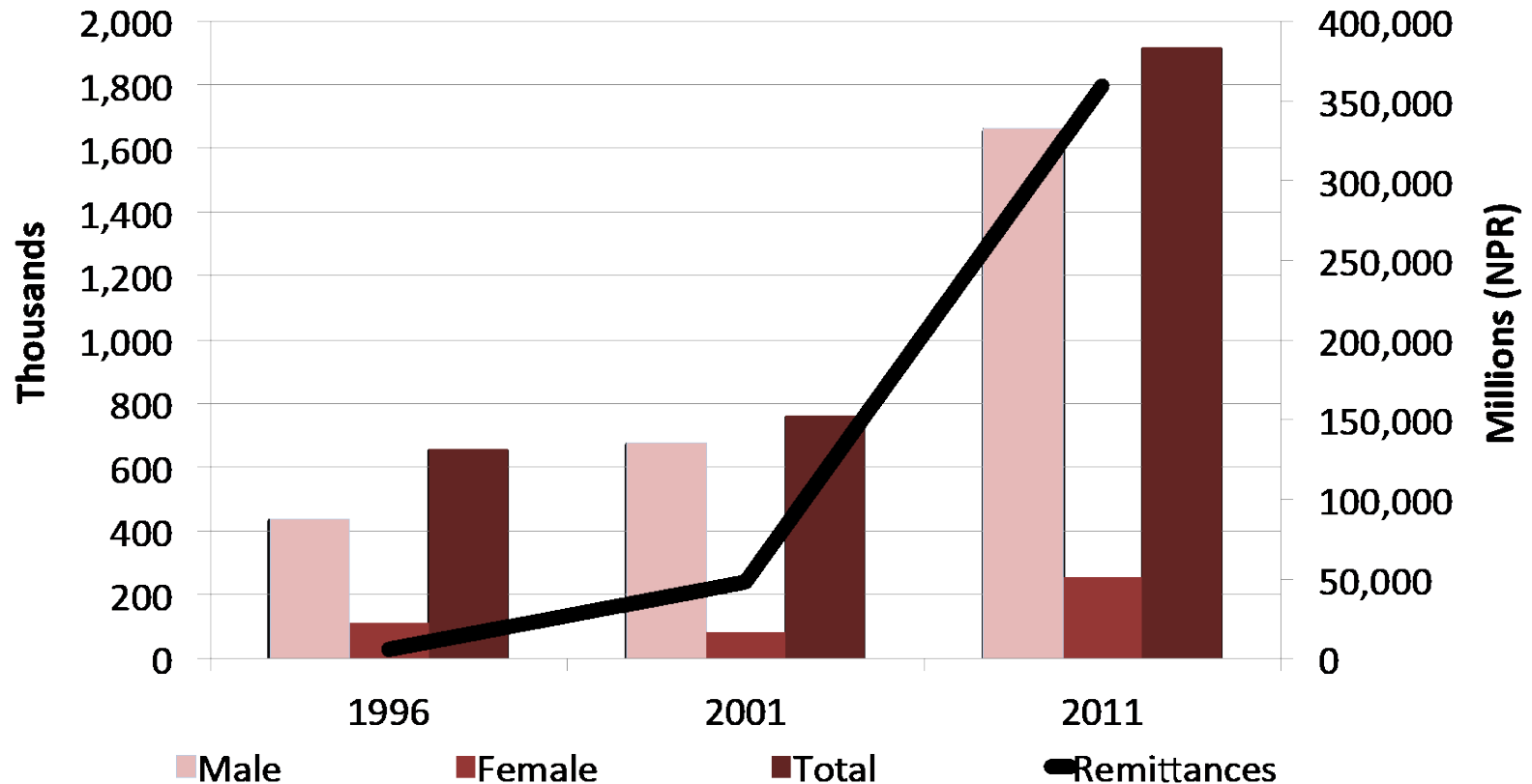
*However, hill districts account for the majority of the women leaving Nepal for foreign employment, government report shows*

- ROSHAN SEDHAI, KATHMANDU

# Characteristics of migrants

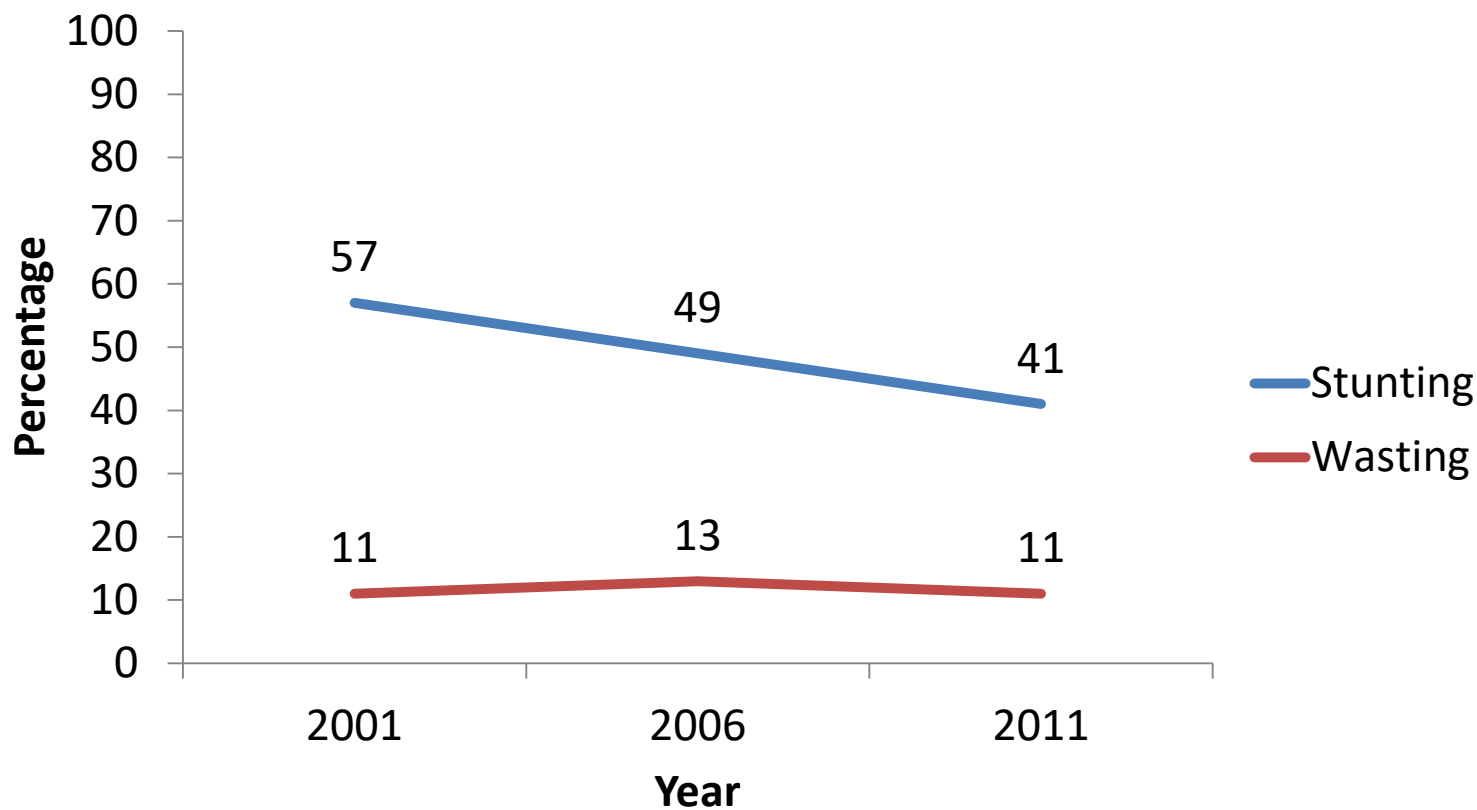


# International Remittances in Nepal



Source: Sijapati et al., 2015 & Sharma et al., 2014

# Undernutrition in Nepal

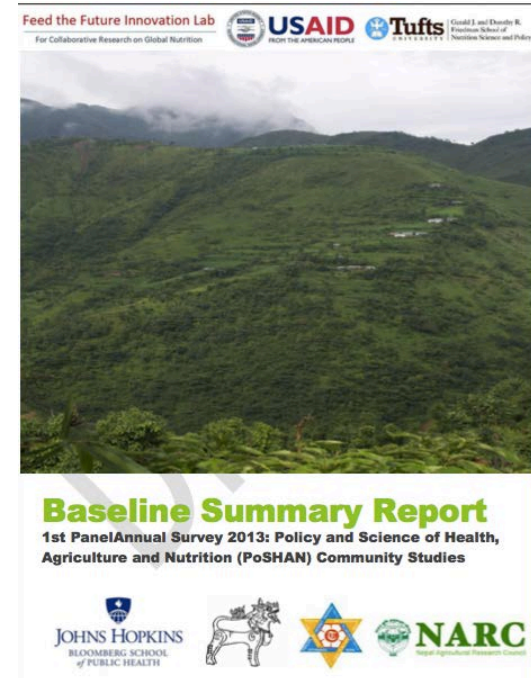


# Research Question

When the father is away are remittances sent to the household associated with child undernutrition?

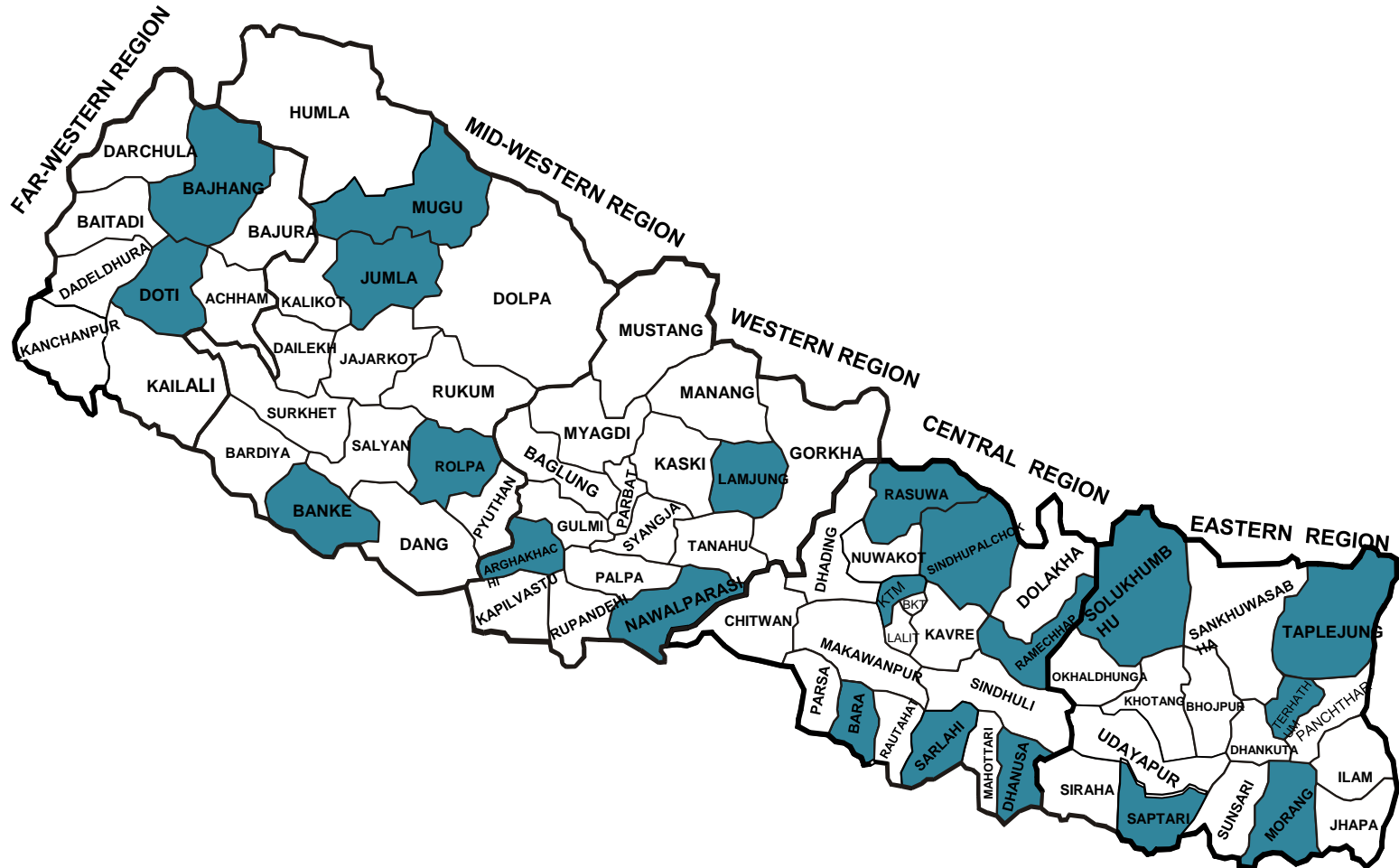
# Data source

- Nutrition Innovation Lab's POSHAN Community Studies, 2013
  - 21 districts, 1 VDC per district
  - All children under 5 & their mothers
  - Newly married women
- This analysis
  - Children 24-59 months (N=2,763)
  - Youngest child in the household
  - Randomly selected 1 twin





# POSHAN Study Sites



# Study variables

Variables	Operationalization
<b>Dependent</b>	
Height-for-age Z score	Continuous
Weight-for-height Z score	Continuous
Dietary diversity	Consumption of food from 7 food groups (cereals, legumes & nuts, flesh foods, egg, dairy, vitamin A rich fruits and vegetables, other fruits and vegetables) in past 7 days
<b>Independent</b>	
Remittances sent when father is away <sup>1</sup>	Categorical; 0=father present and no remittances/remittances; 1=father away & received USD 1-400 over 12 months; 2=father away & received USD 401-1000 over 12 months; 3=father away & received USD 1000-10,000 over 12 months
Remittances sent when father is away <sup>2</sup> (tables 7 and 8)	Categorical; 0=father away and no remittances; 1=father away & received USD 1-400 over 12 months; 2=father away & received USD 401-1000 over 12 months; 3=father away & received USD 1000-10,000 over 12 months

# Study variables cont.

Variables	Operationalization
<b>Covariates</b>	
Child sex	Binary; 1=female
Child age	Continuous; age in months
Child diarrhea	Binary; 1=experienced diarrhea in past 7 days
Maternal age	Continuous; age in years
Maternal education	Categorical; 0=no, 1=some primary, 2=completed primary, 3=some secondary, 4=completed secondary, 5=more than class 11
Maternal height	Categorical; age in centimeters
Number of children in household	Categorical; 1=one, 2=two, 3=three or more
% open defecation in VDC	Continuous; 1=% of households in VDC that use open field for defecation
Caste	Continuous; 1=Dalit, 2=Janjati, 3=Bahun/Chhetri, 4=Other Madhesi Terai, 5=Muslim/Other
Household Food Insecurity	Categorical; 1=None, 2=Mild, 3=Moderate, 4=Severe
Asset quintile	Categorical; 1=poorest, 2=second poorest, 3=middle, 4=second wealthiest, 5=wealthiest; based on having electricity, improved cooking fuel; improved source of water; improved wall, floor, and roof; radio; tv; and bicycle
Agro-ecological zone	Categorical; 1=mountain, 2=hill, 3=terai
Household food expenditure	Categorical; 1=USD 0-43 per month; 2=USD 44-87 per month; 3=USD 88-1,460 per month
HH production of fruits and vegetables in rainy season	Binary; 1=yes
HH production of fruits and vegetables in dry season	Binary; 1=yes

# Results

**Table 1. Background characteristics of children, mothers, and households in round 1 (2013)**

Characteristics	All	Father away	Father not away	Father away vs. Father not away
	N=2763	N=961	N=1795	
	Mean (SD)/ %	Mean (SD)/ %	Mean (SD)/ %	P-value*
Child sex: female	46.1	44.0	47.2	0.113
Child age in months	40.8(9.9)	40.6(9.9)	40.9(10.0)	0.416
Maternal age in years	28.0(6.3)	28.0(6.6)	28.0(6.1)	0.981
Maternal education level				0.794
No schooling	60.1	60.7	53.0	
Some primary	7.5	7.3	7.2	
Completed primary	4.5	5.0	5.4	
Some secondary	13.6	15.3	15.4	
Completed secondary	6.5	5.4	7.9	
Completed class 11 or higher	7.8	6.4	11.1	
Maternal height in centimeters (N=2752)	151.2(5.5)	151.4(5.3)	151.0(5.6)	0.192
Number of children under 5				0.221
One	56.5	62.9	52.9	
Two	35.3	29.8	38.4	
Three or more	8.3	7.4	8.8	
Percent open defecation in VDC	10.3 (20.6)	5.0 (12.7)	13.2 (23.3)	0.042*
Household Food Insecurity Access Scale (HFIAS) (N=2762)				0.797
None	58.0	55.3	59.6	
Mild	18.6	18.9	18.4	
Moderate	16.9	20.5	15.0	
Severe	6.4	5.3	7.0	

Continued...

Caste				0.894
Dalit	17.6	23.4	14.5	
Janjati	20.8	21.1	20.6	
Bahun/Chhetri	24.0	21.9	25.2	
Other Madhesi Terai	31.7	27.8	33.8	
Muslim/Other	5.9	5.8	6.0	
Wealth quintile				0.947
Poorest	22.9	26.2	21.0	
Second poorest	25.0	26.7	24.0	
Middle	16.9	18.1	16.3	
Second wealthiest	17.1	14.6	18.5	
Wealthiest	18.13	14.36	20.17	
Agro-ecological zone				<0.001***
Mountain	18.8	9.9	23.5	
Hill	24.4	34.3	19.1	
Terai	56.9	55.8	57.5	

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Note: Controlled for ward level clustering; \*=p<0.05, \*\*=p<0.01, \*\*\*=p<0.001

**Table 3. Individual characteristics of children in round 1 (2013)**

Characteristics	All	Father away	Father not away	FA vs. FNA
	N=2763	N=961	N=1795	
	Mean (SD)/ %	Mean (SD)/ %	Mean (SD)/ %	P-value*
Child dietary diversity in past 7 days	5.3(1.2)	5.3(1.2)	5.4(1.3)	0.370
Consumption of individual foods				
Grains	99.7	99.7	99.7	0.894
Legumes	96.4	96.7	96.2	0.557
Flesh food	64.5	61.6	66.0	0.219
Dairy	73.5	72.3	74.3	0.437
Egg	31.5	30.4	32.0	0.584
Vitamin A rich fruits and vegetables	85.5	85.4	85.5	0.990
Other fruits and vegetables	84.5	83.4	85.1	0.541
Child diarrhea in past 7 days	11.3	10.0	12.0	0.278
Height-for-Age Z score	-1.8(1.3)	-1.8(1.3)	-1.8(1.2)	0.794
Weight-for-Height Z score	-1.0(1.0)	-1.0(1.0)	-1.0(1.0)	0.760

Note: Controlled for ward level clustering; \*= $p<0.05$ , \*\*= $p<0.01$ , \*\*\*= $p<0.001$

**Table 4. Characteristics of remitters and amount of remittances in round 1 (2013)**

Characteristics	All	Father away	Father not away
	N=2763	N=961	N=1795
	Mean (SD)/ %	Mean (SD)/ %	Mean (SD)/ %
Father migrated: yes (N=2756)	34.9	NA	NA
Remittance receiving households	35.0	76.6	12.7
Number of different remitters			
One	31.6	69.4	11.3
Two	3.4	7.1	1.3
Three or more	0.04	0.1	NA
Median annual remittances received in NPR (N=A:961; FA:733; FNA:224)	60000	60000	60000
Location of remitter (N=A:961; FA:733; FNA:224)			
Urban Nepal	12.6	12.4	13
Rural Nepal	2.8	2.9	2.7
India	31.5	32.5	27.7
Malaysia	19.4	18.3	22.8
Middle East	35.3	36.2	33.0
North America	0.5	0.3	1.3
UK	1.7	1.2	3.1
Other	0.1	NA	0.5
Annual remittances in USD (A:961; FA:733; FNA:224)			
1-400	31.6	30.8	34.4
400-1000	36.9	37.9	33.5
>1000	31.4	31.2	32.1



Table 5. Association between remittances when father is away, and child nutrition outcomes in round 1 (2013)

Characteristics	Height-for-Age Z-score				Weight-for-Height Z-score			
	Simple (N=2456)		Full (N=2456)		Simple (N=2456)		Full (N=2456)	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Remittances sent when father is away (USD)								
None	Referent		Referent					
10-400	-0.156	0.146	0.026	0.749	-0.016	0.824	0.075	0.233
401-1000	0.030	0.766	0.036	0.669	-0.075	0.327	-0.009	0.862
>1000	0.129	0.201	0.025	0.796	0.069	0.420	0.034	0.621
Child age in months			-0.005	0.095			<-0.001	0.832
Child sex: female			-0.086	0.112			0.022	0.586
Child diarrhea (in past 7 days)			-0.205	0.016*			-0.145	0.022*
Child dietary diversity			0.068	0.007**			0.050	0.014*
Maternal age in years			0.020	0.000***			<-0.001	0.688
Maternal height in centimeters			0.056	0.000***			0.005	0.148*
Maternal education								
None			Referent					
Some primary			0.149	0.040*			0.067	0.428
Completed primary			0.056	0.697			0.055	0.554
Some secondary			0.072	0.270			0.002	0.977
Completed secondary			0.204	0.039*			0.092	0.267
Completed class 12 or higher			0.251	0.004**			0.065	0.336
Household has number of children under 5								
One			Referent					
Two			-0.119	0.060*			0.038	0.335
Three or more			-0.292	0.000***			0.058	0.345
% open defecation in VDC			0.005	0.017*			<-0.001	0.904
Agro-ecological zone								
Mountain			Referent					
Hill			0.095	0.431			-0.195	0.044*
Terai			0.414	0.000***			-0.600	0.000***
Caste								
Dalit			Referent					
Janjati			-0.020	0.844			0.442	0.000***
Bahun/Chhetri			-0.075	0.430			-0.027	0.732
Other Madhesi Terai			-0.161	0.250			0.013	0.846
Muslim/Other			-0.540	0.000***			-0.051	0.541
Wealth quintile								
Poorest			Referent					
Second poorest			0.121	0.103			0.124	0.074
Middle			0.148	0.052			0.135	0.029*
Second wealthiest			0.270	0.004**			0.098	0.185
Wealthiest			0.502	0.000***			0.168	0.053

Note: \* = p-value &lt; 0.05; \*\* = p-value &lt; 0.01; \*\*\* = p-value &lt; 0.001

Both models controlled for ward level clustering

**Table 5. Association between remittances when father is away, and child nutrition outcomes in rc**

Characteristics	Diet Diversity			
	Simple (N=1882)		Full (N=1882)	
	Coef.	P-Value	Coef.	P-Value
Remittances sent when father is away (USD)				
None	Referent		Referent	
10-400	-0.123	0.026*	-0.028	0.362
401-1000	-0.029	0.154	-0.009	0.601
>1000	0.090	0.000***	0.058	0.002**
Child sex: female			<-0.001	0.643
Child age in months			<0.001	0.960
Child diarrhea (in past 7 days)			0.027	0.121
Maternal age in years			0.001	0.342
Maternal education				
None			Referent	
Some primary			0.050	0.012*
Completed primary			0.053	0.042*
Some secondary			0.046	0.013**
Completed secondary			0.053	0.009*
Completed class 12 or higher			0.068	0.014*
Household has number of children under 5				
One			Referent	
Two			-0.024	0.054*
Three or more			-0.046	0.006**
% open defecation in VDC			<-0.001	0.943
Household Food Insecurity Access Scale (HFIAS)				
Secure			Referent	
Mild			-0.033	0.042*
Moderate			-0.047	0.006**
Severe			-0.116	0.004**
Agro-ecological zone				
Mountain			Referent	
Hill			0.027	0.471
Terai			0.096	0.001**
Caste				
Dalit			Referent	
Janjati			0.047	0.045*
Bahun/Chhetri			0.012	0.676
Other Madhesi Terai			0.005	0.840
Muslim/Other			0.041	0.259
Wealth quintile				
Poorest			Referent	
Second poorest			0.063	0.010*
Middle			0.088	0.001**
Second wealthiest			0.076	0.001**
Wealthiest			0.130	0.000***
Household food expenditure in past month (USD)				
0-43			Referent	
44-87			0.074	0.000***
88-1460			0.137	0.000***
Home production of fruits & veg (rainy)			0.008	0.547
Home production of fruits & veg (dry)			0.004	0.802

Note: \* = p-value < 0.05; \*\* = p-value < 0.01;

Both models controlled for ward level clustering

**Table 7. Association between remittances when father is away, and child nutrition outcomes among households with father away in round 1 (2013)**

Characteristics	Height-for-Age Z Score				Weight-for-Height Z Score			
	Simple (N=934)		Full (N=934)		Simple (N=934)		Full (N=934)	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Remittances sent when father is away (USD)								
None	Referent							
10-400	-0.203	0.074	-0.002	0.984	-0.129	0.214	0.048	0.569
401-1000	-0.018	0.890	-0.045	0.659	-0.187	0.036	-0.062	0.397
>1000	0.081	0.510	-0.094	0.475	-0.044	0.636	0.005	0.949

Both models controlled for ward level clustering. Full model also controlled for child, maternal and household factors

**Table 8. Association between remittances when father is away, and child dietary diversity among households where father is away in round 1 (2013)**

Characteristics	Diet Diversity			
	Simple (N=705)		Full (N=705)	
	Coef.	P-Value	Coef.	P-Value
Remittances sent when father is away (USD)				
None				
10-400	-0.094	0.085	-0.017	0.630
401-1000	-0.001	0.977	-0.002	0.933
>1000	0.118	0.000***	0.066	0.014*

Note: \*=p-value<0.05; \*\*=p-value<0.01; \*\*\*=p-value<0.001

Both models controlled for ward level clustering. Full model also controlled for child, maternal and

# Studies in LMICs

- Positive and significant effect of remittances and WHZ and WAZ but not HAZ in Ecuador (Anton et al., 2010)
- Lower stunting in households where father is a migrant in Sri Lanka (Jayatissa et al., 2016)
- International migration of father correlated with 22.1% lower HAZ for children under 3 but remittances have no effect on HAZ in Guatemala (Davis et al., 2016)
- No improvement in child nutrition status from having a migrant parent in the Philippines and Vietnam (Graham et al., 2013)
- No change in child nutrition status in migrant households in rural China (Zhou et al., 2016)

# Limitations

- Cross-sectional study: association not causation
- Did not take endogeneity of migration into account: households that have a migrant are different from those that do not
- Did not control for duration of migration
- Do not know if father is the remitter for all children
- Do not know definitively if father is away for work

# Conclusions

- Remittances when the father is away is not associated with HAZ or WHZ.
- Remittances when the father is away is positively associated with dietary diversity when more than USD 1,000 was sent over 12 months.
- More investment in research on the relationship between work migration, remittances and child nutrition are required.