

No rice in the house: risk factors and association with nutritional status of Nepalese 9-13 year olds.

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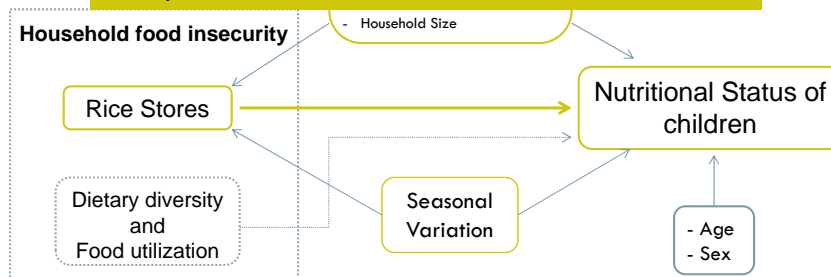
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Objectives

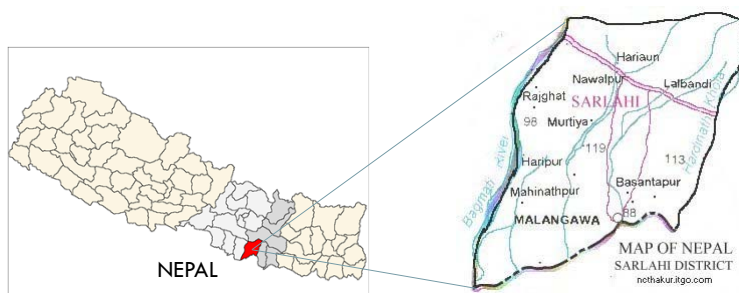
- To study the risk factors associated with households that do not have any rice stores
- To study the association between households having no rice stores and nutritional status of children

Pathway

The WHO defines food security as a state in which “all people at all times have both physical, social and economic access to sufficient, safe, nutritious food that meets their dietary needs and food preferences for an active and healthy life”



Nepal and Sarlahi



Methods

- Study Population
 - 13,137 children 9-13 years old in Sarlahi district of Nepal from the NNIPS cohort follow up study
- Cross-sectional survey of households and children between 2006-2008
- Measures
 - Household characteristics – caste, ethnicity, household size, asset ownership, land ownership and household construction materials
 - Presence/Absence of rice stores
 - Mid upper arm circumference

Methods

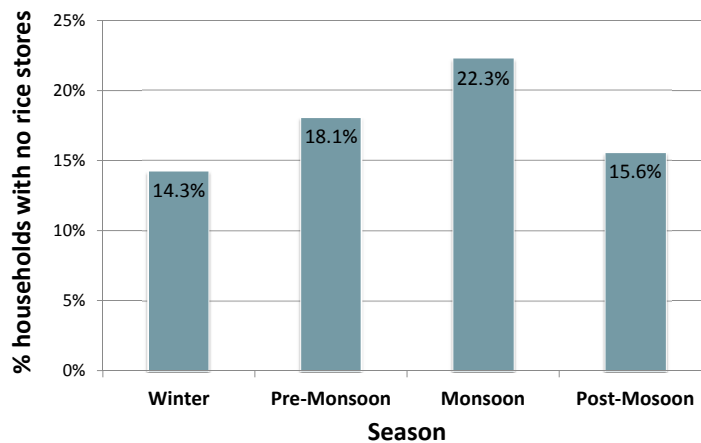
- Data Analysis
 - Bivariate and multivariate logistic regression of absence of rice stores with household characteristics and season
 - Bivariate and multivariate linear regression of mid-upper arm circumference with absence of rice stores adjusting for age, sex, household characteristics and season
 - Analysis using Stata v12

Results

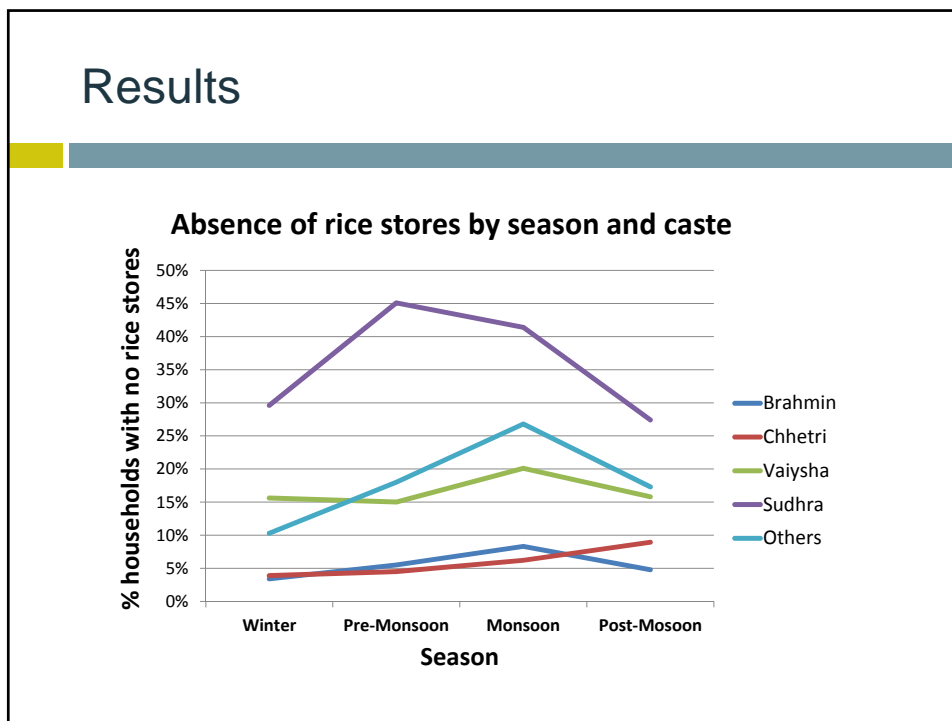
- 17.3% of the households had no rice stores in the house
- Children
 - Mean age was 10.9 years
 - 51% males
 - Mean mid-upper arm circumference was 17.07 ± 1.53 cm
 - Boys 16.9 ± 1.44 cm
 - Girls 17.24 ± 1.6 cm

Results

Absence of rice stores by season



Results



Results – Risk of no rice stores

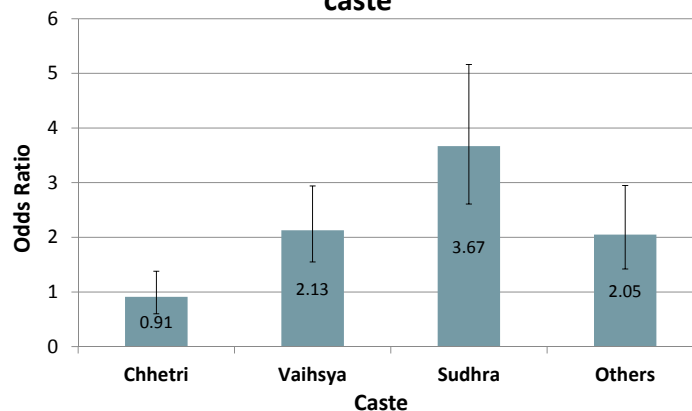
Regression Analysis

- **Household size:** Although associated with rice stores in bivariate analysis (OR 0.66 95% CI 0.59 to 0.73), association no longer significant after adjusting for other variables
- **Ethnicity:** Households of Madeshi origin less likely to have no rice stores than those of Pahadi origin, adj.OR 0.67 (95% CI 0.59 to 0.75)
- **Household construction:** Households with construction materials other than cement at greater risk, adj. OR 1.45 (95% CI 1.23 to 1.71)

*Adj. OR from model including caste, ethnicity, asset and land ownership ,household construction and season.

Results – Risk of no rice stores

Odds Ratios of risk of no rice stores by caste



*Adj. OR from model including caste, ethnicity, asset and land ownership ,household construction and season.

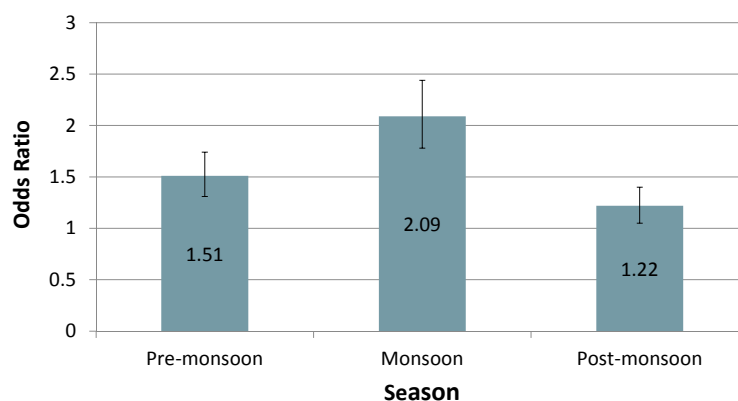
Results – Risk of no rice stores

- **Asset ownership**
 - Increased risk for household with less assets
 - Middle tertile adj. OR 2.14 (95% CI 1.79 to 2.56)
 - Lower tertile adj. OR 4.73 (95% CI 3.97 to 5.63)
- **Land ownership**
 - Increased risk for household with less land
 - < 10 katthas adj. OR 2.41 (95% CI 2.02 to 2.88)
 - No land adj. OR 4.33 (95% CI 3.66 to 5.11)

*Adj. OR from model including caste, ethnicity, asset and land ownership ,household construction and season.

Results – Risk of no rice stores

Odds Ratios of risk of no rice stores by season



*Adj. OR from model including caste, ethnicity, asset and land ownership ,household construction and season.

Results – Nutritional Status

- **No association between absence of rice stores and mid-upper arm circumference after adjusting for other covariates**
 - Unadjusted b-coefficient -0.27cm (95% CI -0.34 to -0.20)
 - Adjusted* b-coefficient -0.06cm (-0.13 to 0.01)
- **Significant seasonal variation in mid-upper arm circumference in other seasons compared to the winter**
 - Pre-monsoon b-coefficient -0.12cm (95% CI -0.18 to -0.05)
 - Monsoon (planting season) b-coefficient -0.20cm (95% CI -0.28 to -0.12)
 - Post-monsoon (harvest Season) b-coefficient -0.18 (95% CI -0.24 to -0.11)
- **Significant associations between mid-upper arm circumference caste, ethnicity, household construction, land ownership and asset ownership.**

*Model adjusted for age, sex, caste, ethnicity, asset and land ownership ,household construction and season.

Conclusions

- **Risk of no rice stores**
 - Low socio-economic status and having less farmland associated with greater risk of no rice stores
 - Ethnicity and caste were significantly associated with no rice stores even after adjusting for indicators of economic status indicates the ability of these measures to capture issues beyond socio-economic status that contributes to food insecurity, helps identify vulnerable households
 - Significant association seen with season, helps identify periods of greatest risk to target and intensify interventions

Conclusions

- **Nutritional Status – mid-upper arm circumference**
 - Association seen between absence of rice stores and arm circumference in bivariate analysis explained by other covariates in multivariate analysis
 - Significant association of asset ownership, land ownership and household construction with nutritional status indicative of the role of poverty in malnutrition
 - Significant association of caste and ethnicity with nutritional status indicative of social dimension of malnutrition
 - Seasonal variation of mid-upper arm circumference reflects the importance of taking season into consideration for making inferences from nutritional status measurements and targeting interventions

Further Research

- Study indicates that assessing the presence of staple foods in the household can give us a lot of information about the characteristics of the household. Important to further examine the predictive power of a simple question asking about rice stores in the house.
- PoSHAN Community Studies, an opportunity to further investigate associations between rice stores, household characteristics and nutritional status on a national level.