Does Amount and Kind of Food Bought by a Household Vary by Indices of Wealth in Nepal?

E Biehl[1], S Manohar[1], R Rajbhandary[2], R Shrestha[2], P Webb[3], RDW Klemm[1], KP West, Jr.[1]

[1]Ctr. For Human Nutrition, Dept. of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA;

[2]Nutrition Innovation Lab-Nepal, Kathmandu, Nepal; [3]Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA, USA

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Introduction

In Nepal, 41% of children under age five are stunted, 29% of children are underweight, and 18% of women of reproductive age are undernourished.[1] 23% of households are moderately and 16% are severely food insecure.[1] In addition, dietary intake of foods high in micronutrients such as Vitamin A and iron is low.[2] One possible pathway to improve maternal and child nutrition is through increasing income-generating agricultural production, thereby improving a household's ability to purchase more nutritious foods and, theoretically, increasing dietary diversity.[3]

Improving dietary diversity is especially important in rural Nepal, where more than 84% of rural households consume a high staple diet (more than 60% of kcal from energy-dense grains and starches) and 52% have a very high staple diet (>75% of kcal from staples).[4] Additionally, agricultural production, climate, and infrastructure differ greatly between Nepal's agro-ecological zones, resulting in varying levels of income, food security, and nutritional status in the mountains, hills, and terai.

Evidence from other countries suggests that increasing income may increase dietary diversity and consumption of more non-staple foods such as fruits and vegetables, meats, and dairy.[5,6] In Nepal, evidence supporting the agriculture-income-nutrition pathway is limited. Systematic reviews of studies in Nepal addressing the effectiveness of nutrition-sensitive programs have found few, if any, programs measuring the effect of improved income on nutrition through food purchases, and call for more evidence supporting enhanced agriculture's indirect effects on nutrition through changes in income.[7,8]

Objectives

1) **Characterize typical household food expenditures in Nepal and**
2) **Explore how food expenditure on staples, animal-sourced foods, and fruits & vegetables differs by wealth group and other household factors.**

Understanding how households use income for food expenditure can inform programs and policies that aim to improve nutrition through the support of income-generating activities.

Methods

- Data from 4,286 households (HH) assessed in the **PoSHAN (Policy and Science for Health, Agriculture and Nutrition) Community Studies**, a national survey of 21 Village Development Committees across 3 agro-ecological zones in Nepal (May-Jul 2013).
- **Assessed associations between HH wealth and expenditure on specific foods** using reported monthly household expenditures and socio-economic status (SES) indicators such as HH assets, HH amenities, and HH construction materials. Wealth index created from SES indicators using Principal Components Analysis.
- Results analyzed through crosswise comparisons of median expenditure on select food groups by wealth quintile; **stratified by zone, sex of head of HH, maternal involvement in household food purchases, and maternal education**, using the Wilcoxon rank sum test. Differences in median total food expenditure by zone were tested with the Kruskal-Wallis test.
- Expenditure data on 40 food items categorized into 9 food groups: staples, meat/poultry, fruits/vegetables, eggs, dairy, legumes/nuts, oils, snacks, other (jaard/raksi, sugar, tea, juice, soda).

Results

Table 1. Baseline Household Income & Expenditure Characteristics, by Agro-Ecological Zone

	Overall N = 4286*	Mountains N = 793*	Hills N = 1127*	Terai N = 2366*
Median Food Expenditure, NRS (IQR)	6052 (3400 - 10440)	8455 (4395 - 15700)	5995 (3605 - 9720)	5582 (3140 - 9447)
Median Non-food Expenditure, NRS (IQR)	3060 (1330 - 6700)	4500 (1800 - 9100)	2320 (950 - 5650)	3045 (1500 - 6365)
Median Reported Total Income in the Past 30 Days, NRS (IQR)	85 (0-10000)	3000 (0-18200)	0 (0-5430)	500 (0-9000)
Wealth Quintile (n,%)				
1st	858 (20.0)	43 (5.4)	217 (19.2)	598 (25.3)
2nd	867 (20.2)	162 (20.4)	211 (18.7)	494 (20.9)
3rd	862 (20.1)	270 (34.1)	204 (18.1)	388 (16.4)
4th	840 (19.6)	244 (30.8)	131 (11.6)	465 (19.7)
5th	857 (20.0)	73 (9.2)	364 (32.3)	420 (17.8)

*N's w/in +/- 5%

Figure 1. Proportion of Median HH Expenditure Spent on Each Food Group

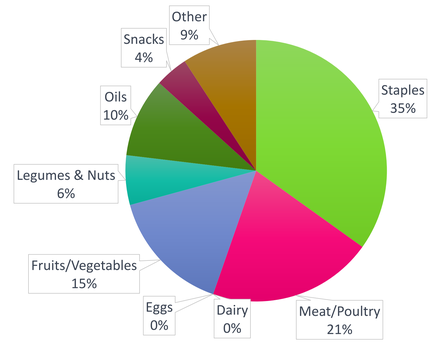
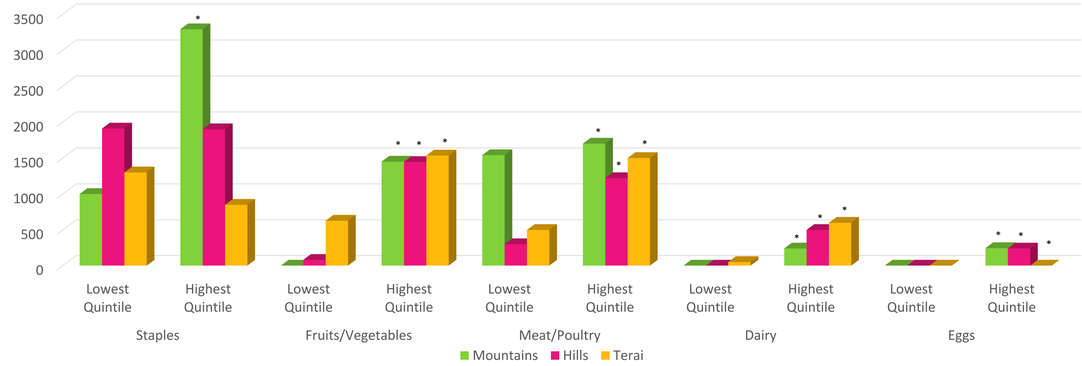


Figure 2. Household Food Expenditure in Highest vs Lowest Wealth Quintiles, by Agro-Ecological Zone



* Significant difference in distribution of expenditure between highest and lowest wealth quintiles at p<.05

Table 2. Median (IQR) Household Expenditure (NRS) on Food Groups, by Wealth Quintile & Household Characteristics

	Staples		Fruits/Vegetables		Meat/Poultry		Dairy		Eggs	
Sex of Head of HH	**Lowest Quintile**	**Highest Quintile**	**Lowest Quintile**	**Highest Quintile**	**Lowest Quintile**	**Highest Quintile**	**Highest Quintile**	**Lowest Quintile**	**Highest Quintile**	**Lowest Quintile**
Male (n=3156)	**1470 (300-3000)**	**1800* (500-3500)**	510 (200-1000)	1600* (840-2970)	550 (100-1160)	1550* (800-3000)	0 (0-200)	600* (0-1200)	0 (0)	60* (0-260)
Female (n=1130)	1500 (188-3150)	1620 (400-2250)	290 (60-670)	1010* (505-1990)	300 (0-700)	940* (500-1800)	0 (0-80)	250* (0-800)	0 (0)	104* (0-260)
Food Expenditure Decision-making										
Mother Involved (n=2196)	**1650 (300-2880)**	**1790* (600-2860)**	350 (100-750)	1400* (720-2565)	300 (0-800)	1200* (655-2200)	0 (0-100)	450* (0-1000)	0 (0)	130* (0-300)
Mother Not Involved (n =1964)	**1340 (300-3145)**	**1597.5* (400-3762.5)**	570 (230-997.5)	1600* (800-3035)	600 (200-1200)	1680* (730-3175)	0 (0-250)	600 (0-1200)	0 (0)	0* (0-240)
Maternal Education Completed										
No Education (n=2171)	**1635 (300-3130)**	**2025* (800-3480)**	470 (150-940)	1410* (715-2565)	450 (0-1000)	1150* (600-2240)	0 (0-170)	240* (0-750)	0 (0)	40* (0-250)
Primary (n=527)	1389 (300-2545)	1735 (495-3200)	375 (80-675)	1340* (610-2470)	500 (150-900)	1550* (930-2900)	0 (0-300)	300* (0-980)	0 (0-40)	80* (0-250)
Secondary (n=1002)	**985 (80-2445)**	**1670* (422.5-3150)**	150 (30-680)	1390* (777.5-2705)	400 (0-900)	1500* (700-2500)	0 (0-60)	500* (0-1080)	0 (0)	92.5* (0-260)
Post-Secondary (n=586)	745 (120-2540)	1555 (350-3100)	210 (50-655)	1762.5* (865-3190)	955 (225-1625)	1500* (640-3000)	0 (0)	630* (0-1500)	0 (0-25)	100* (0-290)

* significant difference in distribution of highest vs lowest wealth quintiles at p<.05

Key Findings

Characterization of food expenditure:

- **Median monthly HH food expenditure was 6052 NRS** overall, and significantly differed by zone (p=.0001), with the **highest median expenditure in the mountains.**
- Staples and meat/poultry products constitute more than half of the food budget. As expected, highly consumed **staple foods made up the largest portion of food expenditure**, followed by more expensive meat and poultry, fruits & vegetables, and oils.
- **Median HH expenditure on eggs and dairy was 0 NRS.**

Associations between food expenditure & wealth:

- **Overall, expenditure on all food groups was higher in HHs above the highest versus below the lowest wealth quintile.**
- When stratifying by regional and HH factors, in HHs above the highest vs lowest wealth quintiles, **staples expenditure was higher in HHs headed by males** (p=.0006), **located in the mountains** (p<.01), **and with women with no** (p<.01) **or secondary education** (p=.02).
- **Fruits, vegetables, dairy, and meats were more likely to be purchased by HHs of greatest vs least wealth in all agro-ecological zones and by all stratum** of head of household sex, maternal education, and maternal involvement in food expenditure decision-making.

Conclusion

The results of this analysis suggest that higher income does translate into increased quantity and variety of food purchases, particularly of micronutrient-rich foods, supporting policies and programs that aim to improve nutrition through income-generation and enabling poorer households to access nutritious foods via market purchases.

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Contact

Erin Biehl
ebiehl1@jhu.edu
(01) 906-281-1516
Johns Hopkins Bloomberg School of Public Health

Acknowledgements

The PoSHAN Community Studies are conducted in collaboration with the Nepal Agricultural Research Council and the Institute of Medicine. Funding for this research was provided by the United States Agency for International Development and the Borlaug Fellows Program at Purdue University's Center for Global Food Security.