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The U.S. Government's Global Hunger & Food Security Initiative

Aquaculture and Horticulture Programs: Impacts of single vz multiple interventions in Bangladesh

Early Preliminary Findings

Dhaka, March 21, 2016



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GERALD J. AND DOROTHY R.
Friedman School of
Nutrition Science and Policy



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“Feed the Future is under pressure to show results [regarding] improving agricultural productivity and nutrition.”

Source: Elliott and Dunning (2016) *Assessing the US Feed the Future Initiative*.
Center for Global Development Paper 75, March 2016



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“Far more research is needed on household- and individual-level effects of...agricultural policies and programs.”

The role of “**nutrient-rich foods in increasing dietary diversity and household consumption of nutritious foods**” requires further research.”

Source: Yosef et al. (2015) Agriculture and Nutrition in **Bangladesh**. *Food and Nutrition Bulletin*, 36 (4): 387-404.



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Hypotheses being tested

1. Better diets, nutrition, behaviors accrue to multiple programs generating 'scale' of coverage/exposure (vz. one intervention)
2. Benefits to diets accrue not only to producers, but to non-program consumers via market access
3. Access to nutrient-rich products can be enhanced (seasonal availability), and quality protected, through adoption of new drying and storage technologies





Study Design

- Longitudinal panel – repeat visit to **3,000 hhs in 20 districts**
- Random hh sample - unions surveyed by IFPRI 2011+2015
- Stratified by participant (producer) and non-participants
- Male and female experiences recorded in each hh.

- ‘Exposure’ to program components identified at hh level.
- Zone-wide multipliers assumed
- Program elements ‘supplied’ are mapped against those adopted.



Two *additional* survey components

1. **Market research** – retailers' views on price drivers of nutrient-rich foods, changing levels of demand by types of product (fish/hort.), seasonal supply: *does production diversification manifest in diversity of market supply?*
2. **Technology research** – HortLab introduction of innovations to enhance supply of nutrient-rich foods: *can value-chain interventions extend seasonal availability, quality and hence price of products?*



Preliminary descriptives (1,577 hhs/c. 50% of sample)

	no FTF program exposure	single exposure	multiple exposure
Hhs doing horticulture	84%	91%	91%
Hhs doing aquaculture	25%	32%	41%

Source: All data presented here are from Round 1 of Nutrition Innovation Lab/ Horticulture Innovation Lab survey in Bangladesh





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Main occupation of hh head (%)	Per capita expenditure quintile	
	1 (lowest)	5 (highest)
Agricultural day laborer	18.7	1.3
Nonagricultural day labor	10.1	1.3
Salaried	4.1	10.2
Self employed	13.3	10.5
Rickshaw/van puller	10.8	0.6
Business/trade	6.0	20.6
Farming	25.0	34.0



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Growing role of women in aquaculture

Was female caregiver involved in aqua in past 6 months?

	no exposure	single exposure	multiple exposure
Yes	16%	19%	22%
No	84%	81%	78%
Part-time?	88%	87%	96%





Growing role of women in aquaculture

How many weeks involved in past 6 months?


	single exposure	multiple exposure
1 week	48%	23%
Up to 6 weeks	37%	51%
Up to 24 weeks	15%	26%





Gross agricultural output

	no exposure	single exposure	multiple exposure
Rice harvest (kg)	1173	1332	874
Veg harvest (kg)	1076	915	1315
Shrimp (kg)	65	15	76





Distance to chosen markets for product sales

	no FTF program exposure	single exposure	multiple exposure
Rice (km)	1.5	1.5	1.5
Fruit (km)	0.6	1.0	1.2
Vegetables (km)	1.7	1.8	3.9
Shrimp (km)	0.9	4.6	5.8





Type of market for fruit and shrimp sales

	no program	single exposure	multiple exposure
FRUIT SALES			
Farmgate	75	50	37
Village market	4	20	25
Town market	21	30	38
SHRIMP SALES			
Farmgate	52	20	33
Village market	31	22	18
Town market	12	38	44



Diets in relation to aquaculture

	HH not involved in aqua. (N=721)	HH is involved in aqua. (N=856)
Women diet diversity (WDDS)	5.3 (mean)	5.4 (mean)
	1.4 (SD)	1.7 (SD)
Women's ASF consumption	45.7%	54.3%
Women's fruit consumption	32.5%	38.0%





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	Times HH visited by ag. extension worker (past yr)		
	0	1-5 times	=>11 times
ASF consumed by female caregiver	96		100
ASF consumed by index child	91	79	100
HH fruit consumption	48	63	100



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Nutrient-rich foods consumed (taka value/cap/week)

	single exposure	multiple exposure
Vegetables	31.7	34.2
Green leafy veg.	3.2	5.4
Meat	28.0	32.0
Milk	8.4	12.1
Fruits	23.8	30.0
Big fish	38.6	49.4
Small fish	9.4	15.2



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When should you wash your hands? (Caregiver response)

% responses	no exposure	single exposure	multiple exposure
Before preparing food and feeding the child	66.8	63.8	69.8
After cleaning child who has defecated	62.5	57.0	61.6





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Should you exclusively breast feed infant up to 6 months?

	no exposure	single exposure	multiple exposure
Yes	95%	92%	92%
Did you/will you?	78%	77%	76%

If not, why not?	no exposure	single exposure	multiple exposure
Told not to	58%	41%	31%
Insufficient breastmilk	38%	34%	55%



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Food quality/safety concerns in shopping past week

% yes	no exposure	single exposure	multiple exposure
Big fish	36	13	16
Small fish	25	13	13
Shrimp	3	2	2
Fruits	26	10	16
Vegetables	45	19	22





- **Stunting** (children <2y) – 31.5%
 - Lower levels of *severe* stunting in multi-program sites, comparing single or no program sites
 - *Higher levels of moderate* stunting

- **Wasting** (children <2y) – 24%
 - *Lower severe* in multi-program sites
 - Higher levels of *moderate wasting*

- **Any anemia** (female caregivers) – 99.9%!!
 - Higher moderate anemia in multi-program sites





Preliminary insights

- Multi-program sites less poor than others (no assumption about direction of causality yet, but these sites are 'younger' in aqua and hort production)
- These have higher farm output (than single program sites)
- They sell shrimp and fruit further (in towns), get higher prices, seem to have better quality, and ability to market
- Suggestive pattern of higher nutrient-rich foods consumed in multiple program sites (but need to control for income, edu.)





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Since “Feed the Future activities primarily occur in “zones of influence”... attribution will always be difficult.”

Source: Elliott and Dunning (2016) *Assessing the US Feed the Future Initiative*.
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