Feed the Future Innovation Lab for Food Security Policy

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Nutrition and growing your own food: Dietary Diversity Evidence from North Central Nigeria

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Introduction

Governments of developing countries have long struggled with nutrition problems of their populace. Nutrition can be linked to own-production because it is assumed that access and availability to own food produced will make households food secure, increase their dietary diversity and nutritional outcomes in the long run. Increasing the dietary diversity of households, as a way of improving nutritional outcomes in Africa, is strongly linked to agriculture. The agriculture sector is an important determinant of nutrition outcomes, related to food availability and access (Ruel and Alderman, 2013). Nutrition-sensitive agricultural interventions have the potential to improve nutritional outcomes in agrarian communities (FAO, 2014). A large number of Africans, Nigerians included, produce a large share of their own food, either as small-scale producers or subsistence farmers. However, there is a gap in the literature on the actual relationship between the production of food by households and their nutritional outcomes. Do households that produce their own food have better nutrition? We examine this question, with a view to understand how policy can play a role in the transition of African households from food producers to food buyers.

This policy brief summarizes findings from a research study that hypothesizes if household's own production is sufficient for a diversity of foods in their diets.

Our analysis uses the highly-detailed Living Standard Measurement Survey-Integrated Surveys on Agriculture (LSMS-ISA) dataset for Nigeria. This World Bank survey consists of an unbalanced panel from three waves (2010, 2012 and 2015). The data was collected at the household level at the pre and post planting seasons, the modules used for this analysis include the consumption module, expenditure module, asset module and socio-economic module. Data was analyzed using STATA 15.

Dietary Diversity of Households

Key Findings

- Households' dietary diversity is lower for households that produce a greater share of their own food, compared to households that buy all their food, especially for rural dwellers.
- The least food groups produced and consumed by households are eggs, milk, fish & sea products, sweets and fruits which are vital sources of important micro-nutrients needed by the body.
- Households produce a set of food items that is too narrow to make their diets diverse.

We used the household's level food diversity scores as a proxy for positive nutritional outcomes following other notable publications (e.g Arimond and Ruel, 2004; Ruel 2003; Agada and Igbokwe, 2014). The household food diversity score measures how many food groups feature in a household's consumption portfolio. The 12 food groups based on FAO's recommendation are: (i) cereals, (ii) vegetables, (iii) fruits, (iv) meat, (v) egg (vi) fish and other sea products, (vii) legumes, nuts and seeds (viii) milk and milk products (ix) oil and fats (x) sweets, (xi) spices, condiments and beverage (xii) tubers and roots. For example, a household that consumed only cereals, fruits and vegetables gets a score of three, while a household that consumes substantially from all twelve food groups gets a score of twelve. The measure is easy to construct, and to interpret, while remaining relevant to the health and nutrition of households. (Lovo & Veronesi, (2019); Gitagia et al., 2019).

Household's Own Production

We measure this outcome with the share of household consumption in the data that comes from own-production. This share was gotten by dividing the amount of own production the household consumed by the total amount of food consumed by the household. This share ranged from

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zero to 1 because the household's own production was less than the total amount of food consumed by the households. Our main finding is that household dietary diversity is lower for households that produce a greater share of their own food. Specifically, Table 1 shows that dietary diversity is lower on average by 1.58 for households that produce all their food, compared to households that buy all their food. Columns 2,4 and 5 shows that household's own share of production was significant and reduced their diet diversity. Column 4 shows that household's own share of production for urban household was not significant. This is likely because t most household's in urban areas are not farmers and buy their food.

A propensity score matching was used to verify the fixed effect regression results. This matching estimate of the treatment effects shows that own share of household's production predicted a reduction in the dietary diversity by 62 percent. The result of the PSM further confirms the result from the regressions in table 1 that household's own share of production reduced their diet diversity.

Figure one shows the percentage of the food groups households consume and produce. Households in North Central Nigeria produce more of roots and tubers, cereals and vegetables and they consume less eggs, milk products, fish and sea foods, sweets and fruits.

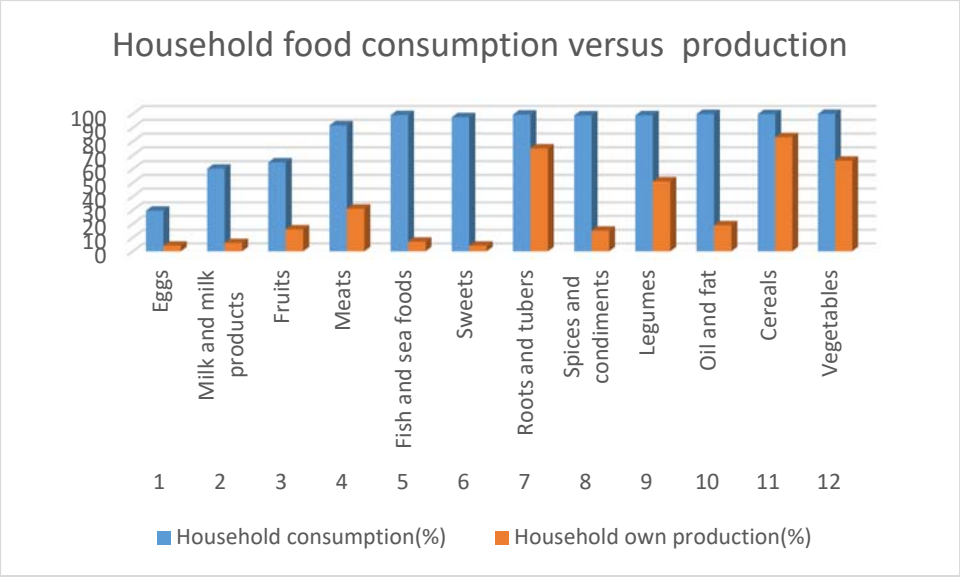
Table 1: Result of Fixed Effects Regression

Dependent Variable: Household food diversity

Models	**(Fe)**	**(Fe)**	**OLS(Urban)**	**OLS(Rural)**
Own Production	-1.85***	-1.37***	0.22	-1.55***
	(0.15)	(0.51)	(1.47)	(0.59)
Total Expenditure		0.48***	0.56***	0.46***
		(0.02)	(0.08)	(0.05)
Value of household asset		0.10***	0.13***	0.09***
		(0.03)	(0.05)	(0.03)
Household Size		-0.03***	-0.07**	-0.02
		(0.01)	(0.03)	(0.02)
Rural/Urban		0.11		
		(0.10)		
Schooling		0.13*	0.19	0.13
		(0.08)	(0.16)	(0.09)
Observations	821	764	209	555
R-squared(within)	0.15	0.34		
R-squared (between)	1.00	1.00		
R-squared(overall)	0.16	0.34	0.30	0.28

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1



Conclusion

Food diversity is used as a proxy to understand the nutritional outcomes of Nigerians. The result shows that current household's own food production reduces food diversity particularly for rural households implying that most rural households produce a narrow set of food items to ensure diverse diets. This problem can be reduced by educating farmers about the need for key nutrients which can affect the production choices of farming households to improve their dietary diversity

References

1. Agada, M.O. and Igbwoke, E.M. (2014). Food security and coping strategies among ethnic groups in North Central Nigeria. ***Development Country studies,*** Vol 3:31-44pp.
2. Arimond, M., & Ruel, M. T. (2004). Dietary diversity is associated with child nutritional status: Evidence from 11 demographic and health surveys. ***The Journal of Nutrition,*** 134(10), 2579–2585. https://doi.org/10.1093/jn/134.10.2579.
3. FAO. (2014) Second International Conference on Nutrition 19-21 Nov 2014. Rome: Food & Agriculture Organization.
4. Gitagia, M., Ramkat, R., Mituki, D., Termote, C., Covic, N., & Cheserek, M. (2019). Determinants of dietary diversity among women of reproductive age in two different agro-ecological zones of Rongai Sub-County, Nakuru, Kenya. ***Food & Nutrition Research,*** *63*. https://doi.org/10.29219/fnr.v63.1553
5. Lovo, S and Veronesi M. (2019). Crop Diversification and Child Health: Empirical Evidence from Tanzania. ***Ecological Economics,*** vol 158:169-179. https://doi-org.proxy1.cl.msu.edu/10.1016/j.ecolecon.2019.01.005
6. Ruel, M. and Alderman, H. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? Lancet. 382:536–51.

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