

How does membership in a farmer producer organisation (FPO) affect agriculture, income, diets and women's empowerment?

A mixed methods study in Uttar Pradesh, India

Nishmeet Singh
PhD student in Agriculture and Food Systems
University of Edinburgh.
(Research consultant: Anuvaad Solutions)



Evidence on FPO participation

- **Farmer Producer Organizations (FPOs):** Farmer producer companies and cooperative societies.
- Evidence of membership effects beyond production and income-limited
- Mixed results for income increments depending on farm size, farm location and market linkages (Context of Rwanda)
- Only 1 study, in Ghana, evaluated the impact of membership on nutrition
 - Found no impact on the BMI of women and men.
- 1 study, in Guatemala, found the commercialization of smallholder coffee producers increased overweight / obesity

Context

- Farmer organisations established for >50 years in India
 - e.g., ~20% of dairy farmers are members of cooperative societies
- National scheme to create 10,000 new FPOs by 2027-2028
- “Uttar Pradesh Farmer Production Organization Policy, 2020”
- UP “Double Burden of Malnutrition: Adult Anemia and NCD prevalence.”
- Fatehpur district, Uttar Pradesh
- Pilot with 1 FPO with members spread across 22 villages



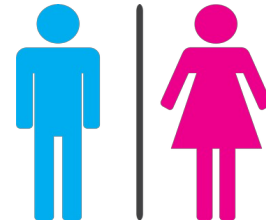
Fatehpur district in Uttar Pradesh, Northern India

Mixed Methods Approach

- Household surveys 28 April and 30 May 2023



- FPOs: 417
- Non-FPOs: 407



- FPOs: 826 adults
- Non-FPOs: 783 adults

- Market basket survey in 13 villages (8 FPO / 5 Non-FPOs)
- 3 in-depth qualitative interviews with stakeholders (more ongoing)

Analysis

Output / Outcome	Indicator	Method
Agriculture	Crop diversity and Crop type in the last 12 months (2 main seasons)	Self-reported
Diet Diversity	Minimum diet diversity (MDD) score	Diet Quality Questionnaire (DQQ)
Women empowerment	Women empowerment in Agriculture Score	Abbreviated Women's Empowerment in Agriculture Index (A-WEAI)
Income	Household Income, Income across sources. Food expenditure last 7 days	Self-reported

- Association between FPO membership and outcomes: Wilcoxon rank-sum test.
- Association with MDD was tested using a logistic regression model, controlling for individual and household-level covariates: education, caste, and household size

Respondent Demographics

Variable	N	Overall, N = 1,609 ¹	FPO household, N = 826 ¹	Non-FPO household, N = 783 ¹	p-value ²
Household members	809				0.3
Mean (SD)		5.4 (1.8)	5.5 (2.0)	5.3 (1.5)	
Respondent education	1,609				<0.001
No formal school (including illiterate)		414, 26%	214, 26%	200, 26%	
Primary, complete (grade 1-4)		392, 24%	161, 19%	231, 30%	
High school, complete (grade 5-9)		435, 27%	232, 28%	203, 26%	
Secondary school, complete		242, 15%	154, 19%	88, 11%	
Graduate and above (including diploma)		126, 7.8%	65, 7.9%	61, 7.8%	
Respondent caste	1,608				<0.001
Scheduled Caste/Tribe (SC/ST)		319, 20%	142, 17%	177, 23%	
Other Backward Caste (OBC)		943, 59%	580, 70%	363, 46%	
General/Other		346, 22%	103, 12%	243, 31%	

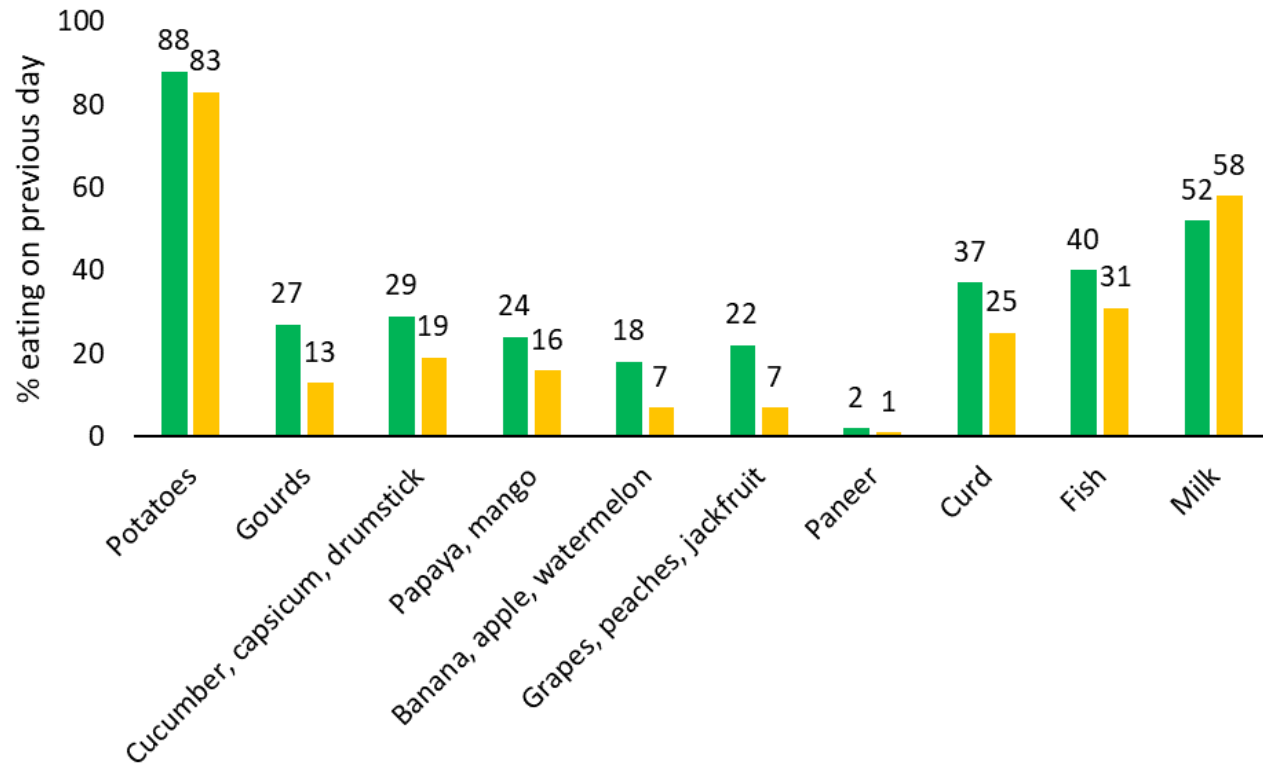
¹n, %

²Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test

Results: Adults diverse diet

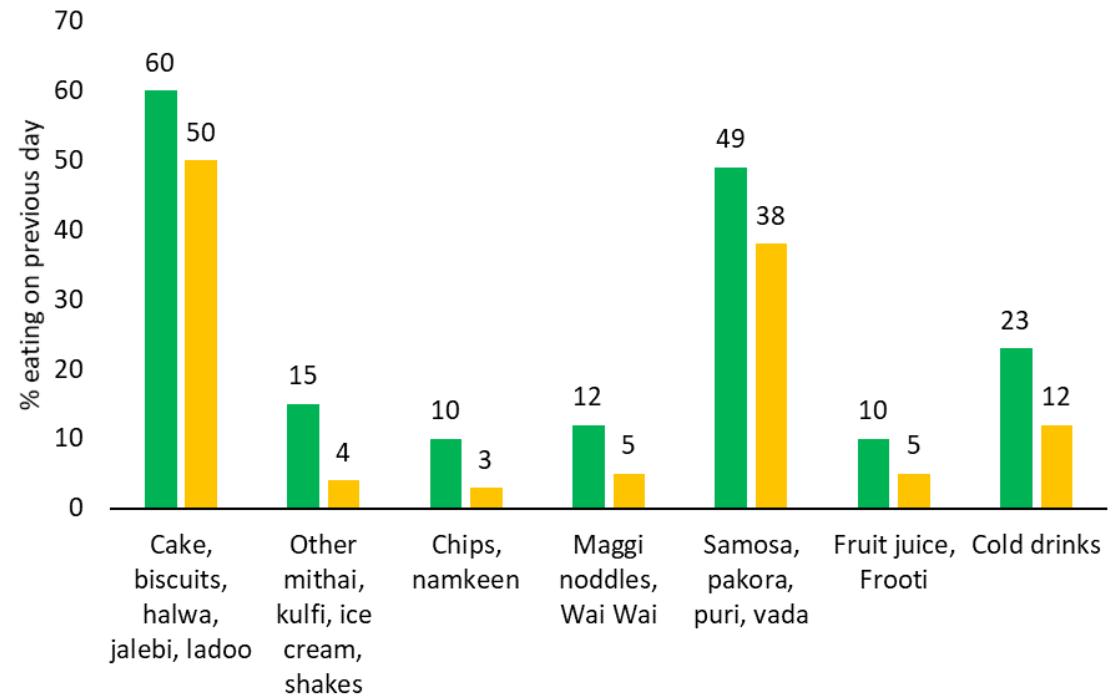
Nutrient-rich Foods

■ FPO ■ Non-FPO



Unhealthy Foods

■ FPO ■ Non-FPO



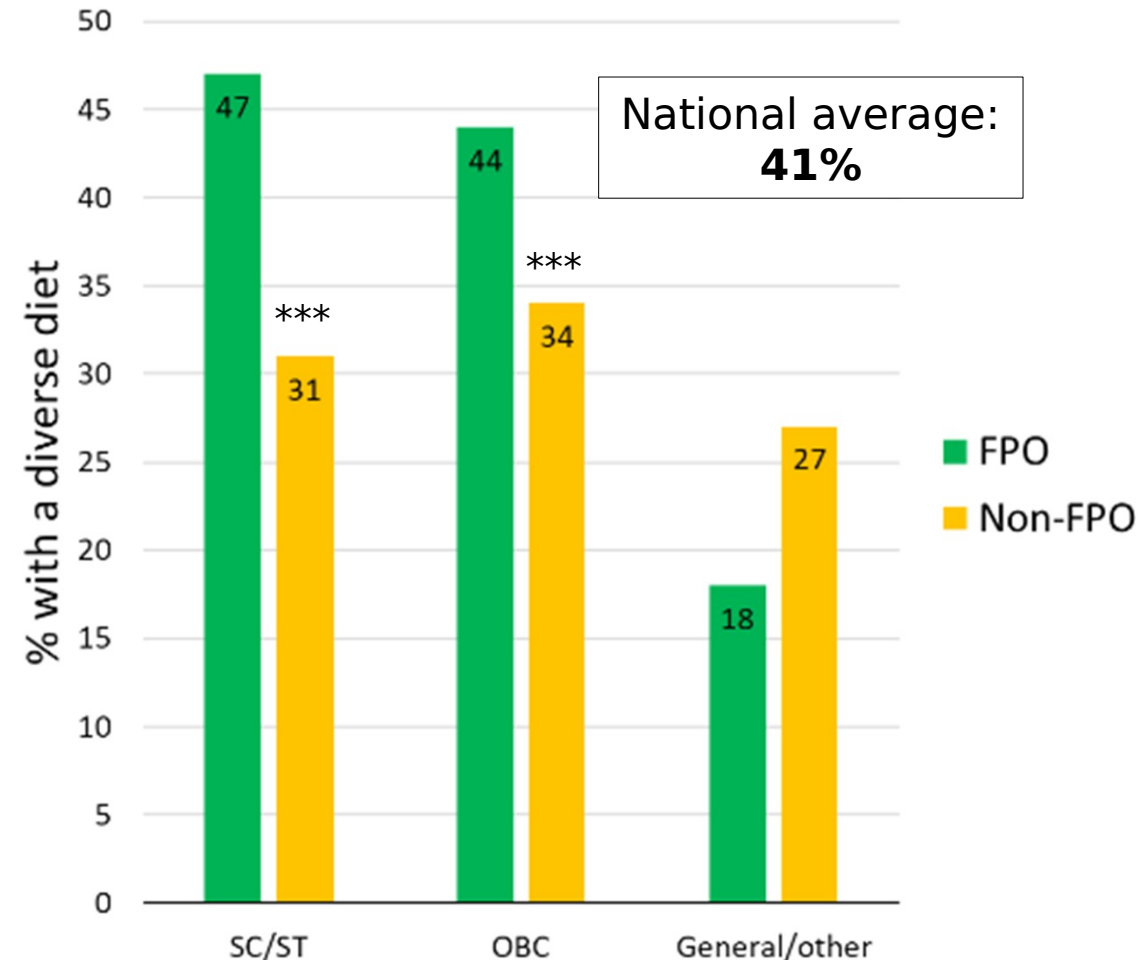
Results: MDD and Women Empowerment

Met MDD

- FPO: 42% vs Non-FPO: 31%
(unadjusted model, $p < 0.001$)
- **FPO households more likely to have higher diet diversity** (adjusted odds ratio: 1.37, $p = .0005$)

Women Empowerment

- FPO: 76% vs. non-FPO: 57 %



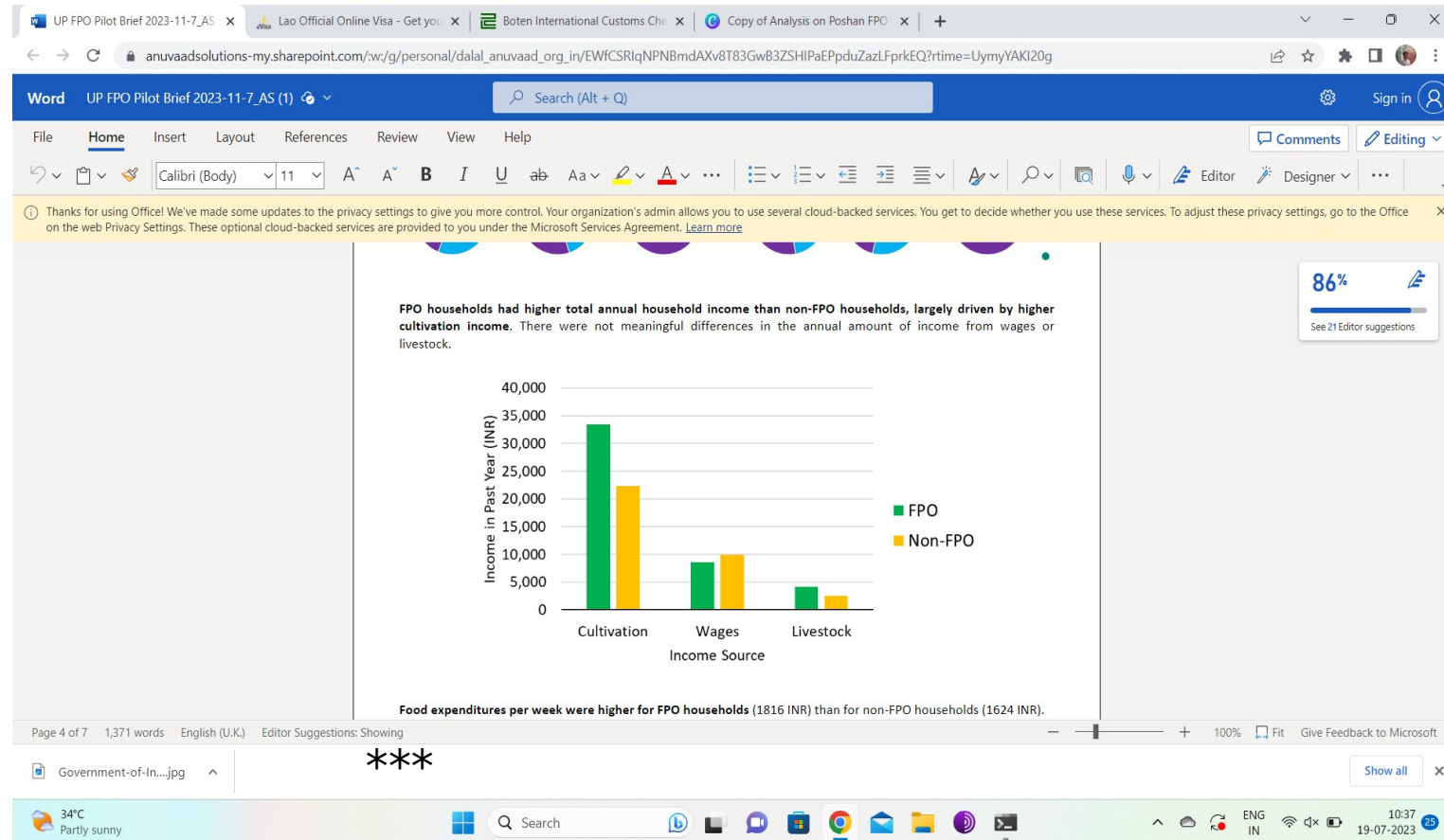
Results: Household Income

- **Per-capita income across all sources (PCI)**

- FPO: 9528 (INR),
- Non-FPO: 6885 (INR), ($p < 0.001$)

- **Weekly Food expenditures**

- FPO 1816 (INR)
- Non-FPO households 1624 (INR)



Income by sources (Indian Rupees)

Results: Food availability in Markets

- **Limited impact of FPO on nutrient-dense food availability**

- Millets were only available in FPO villages (2/8)



- Availability of seeds/nuts was similar between FPO and control villages



- Fresh fruits and vegetables only available in bi-weekly markets



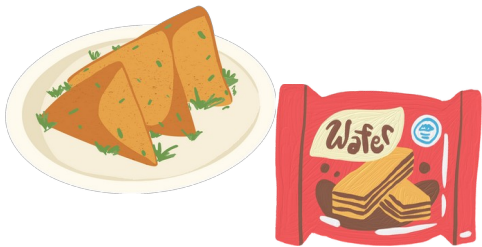
Conclusions

• Promotion of FPO membership may help contribute to:

- Greater dietary diversity, particularly OBC and SC/ST



- Attention: Consumption of unhealthy foods



- Higher incomes from cultivation



- Better Women Empowerment