



Photo: Vicky Santoso

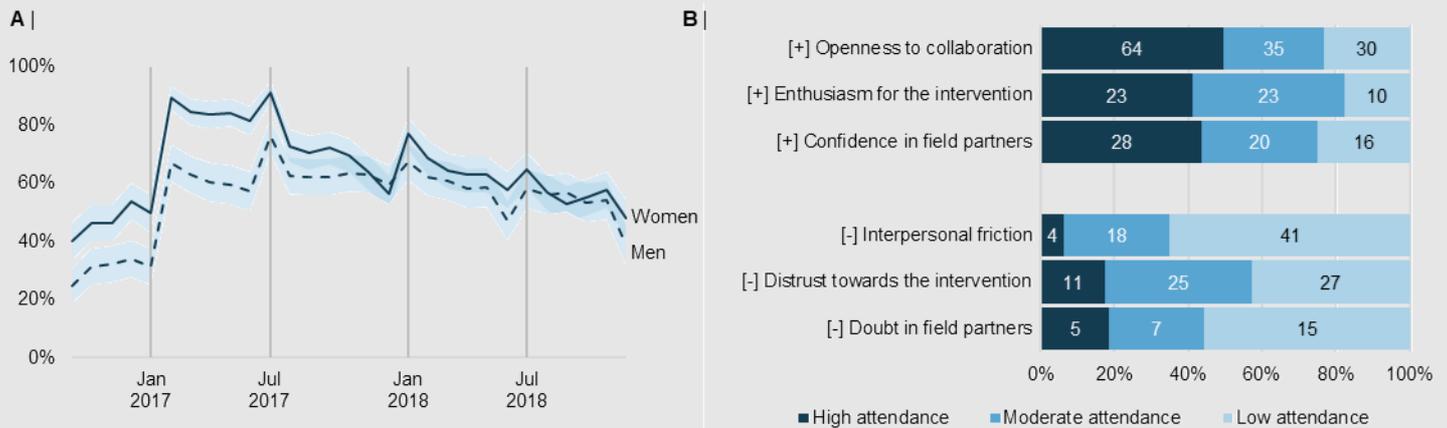
# Participation intensity in a nutrition sensitive agriculture intervention

## FINDINGS

- Group based trajectory modelling can be used to understand participation patterns in NSA interventions.
- Participation intensity was highest among older and highly educated participants from moderate wealth households.
- Field partners' attitudes towards other field partners' abilities and enthusiasm for interventions played a role in village participation intensity throughout the intervention.
- Higher participation intensity was associated with greater recalls of meeting topics, knowledge of key methods, and immediate intervention outcomes.

## RATIONALE

Nutrition-sensitive agricultural (NSA) interventions improve children's diets through asset provision as well as behavioral changes and social support from participation in intervention activities<sup>1</sup>. Participation intensity, therefore, is an important program delivery indicator and yet, it is underanalyzed in evaluations of NSA interventions. Research on participation intensity in NSAs has so far been limited to brief mentions in impact evaluation reports and discussions on its importance<sup>2-6</sup>. Published papers analyzing the partten of a program's participation intensity and its predictors are rare<sup>7</sup>. Of the 29 papers on NSA interventions identified in a recent systematic review, none analyzed determinants of participation intensity, and only two analyzed consequences of participation intensity on program impact<sup>8</sup>. Therefore, this study explores participation intensity in the Singida Nutrition and Agroecology Project (SNAP-Tz, NCT 02761876), a participatory nutrition-sensitive agroecology intervention<sup>9</sup>.



**Figure A** shows the mean and 95% CI of the mean program participation intensity over the course of the Singida Nutrition and Agroecology Project, disaggregated by gender, as indicated by attendance at village-level project meetings and household visits by mentor farmers at each month. **Figure B** shows the number of times themes identified were mentioned in mentor farmer interviews that could explain higher or lower program participation intensity according to the attendance tier of participating villages.

## RECOMMENDATIONS

- While our sample's participation did not reveal distinct trajectory groups, we recommend other interventions try this method to understand patterns of participation within their sample.
- NSA interventions should identify participants that could face obstacles in attending group meetings within their program design and pre-emptively reach out to facilitate participation.
- NSA interventions should attempt to understand field partners' level of enthusiasm for, and understanding of, the overall intervention early in implementation and address any misconceptions as early as possible.
- Analyzing participation intensity should be standard practice in program evaluation to understand which outcomes are possible to achieve due to participation in NSA interventions.

## METHODS AND FINDINGS

### Quantifying participation intensity

Participation intensity was measured as the number of months of reported attendance of village-level project meetings or engagement during household visits. We used group-based trajectory modeling<sup>10,11</sup> and found only one latent trajectory which was initially low, increased sharply at month 7 (Jul 2017), and plateaued between 55-60% after the first year (Figure A). The flat trajectory in program participation helps to explain why the overall impact of this intervention in month 30 of implementation seemed similar to impact in month 18<sup>9</sup>.

### Baseline predictors of participation intensity

At baseline, higher participation intensity was associated with older age, higher education, being empowered, being in the middle quintile of wealth, and village residence. This finding highlighted one of the challenges of implementing NSA interventions: those who need the program the most participate less, likely due to time and resource constraints.

Qualitative analysis of interviews with mentor farmers at baseline revealed that mentor farmers' attitudes and experiences early in the intervention could be a good indicator for the rate of participation in that village throughout the intervention (Figure B).

### Association with intervention outcomes

Higher participation intensity was associated with greater participant recalls of topics discussed during meetings and greater participant knowledge of key methods. While this is an expected result, there has been little empirical evidence to support it in nutrition-sensitive agriculture interventions<sup>2,8,10</sup>.

The association between high participation intensity and study outcomes were varied. The association was more pronounced in outcomes that are within farmers' decision-making purview e.g., sustainable agriculture outcomes and slightly less so for those that are of bigger societal impact e.g., gender equity outcomes or those limited by resource constraints such as nutrition outcomes.

**CONTACT**

**Marianne V. Santoso**  
[mvsantoso@gmail.com](mailto:mvsantoso@gmail.com)  
 +1 872 400 6900  
 E 106 6<sup>th</sup> St, Ste 900-821  
 Austin, TX 78701

## NEXT STEPS FOR PARTICIPATION INTENSITY IN A NUTRITION SENSITIVE AGRICULTURE INTERVENTION

The full analysis on which this brief is based is pending review, it is due to be published under the “Impacts of Community Participation in Unlocking the Potential of Nutrition Interventions” Special Collection in Current Developments in Nutrition. We hope its publication will encourage other researchers to consider collecting and analyzing participation intensity as part of their program evaluation. We are currently looking for NSA interventions that are interested in having their participation data analyzed using the Group-Based Trajectory Modelling.

**REFERENCES**

1. Warren, A. M. Multilevel and Multisectoral Processes of Implementing Nutrientsensitive Ideology and Programming in Ethiopia’s Development Landscape. (Doctoral Dissertation, 2017)
2. Leykum, L. K., Pugh, J. A., Lanham, H. J., Harmon, J. & McDaniel, R. R. Implementation research design: integrating participatory action research into randomized controlled trials. *Implement. Sci.* 4, 69 (2009).
3. Mosha, D. et al. The impact of integrated nutrition-sensitive interventions on nutrition and health of children and women in rural Tanzania: study protocol for a cluster-randomized controlled trial. *BMC Nutr.* 4, 29 (2018).
4. Elolu, S. & Ongeng, D. Community-based nutrition-sensitive approach to address short-term hunger and undernutrition among primary school children in rural areas in a developing country setting: lessons from North and North-Eastern Uganda. *BMC Nutr.* 6, 73 (2020).
5. Ahmed, S. I. et al. A qualitative evaluation of patients’ understanding. *Arch. Pharm. Pract.* 10, 8.
6. MacLachlan, E. W. et al. “We Are Now Free to Speak”: Qualitative Evaluation of an Education and Empowerment Training for HIV Patients in Namibia. *PLOS ONE* 11, e0153042 (2016).
7. Perez-Escamilla, R. et al. Nutrition disparities and the global burden of malnutrition. *BMJ* k2252 (2018)
8. Sharma, I. K., Di Prima, S., Essink, D. & Broerse, J. E. W. Nutrition-Sensitive Agriculture: A Systematic Review of Impact Pathways to Nutrition Outcomes. *Adv. Nutr.* 12, 251–275 (2021).
9. Santoso, M. V. et al. A Nutrition-Sensitive Agroecology Intervention in Rural Tanzania Increases Children’s Dietary Diversity and Household Food Security But Does Not Change Child Anthropometry: Results from a Cluster-Randomized Trial. *J. Nutr.* 151, 2010–2021 (2021).
10. Leerlooijer, J. N. et al. Qualitative evaluation of the Teenage Mothers Project in Uganda: a community-based empowerment intervention for unmarried teenage mothers. *BMC Public Health* 13, 816 (2013).

**CITATION**

Santoso MV, Petrie HC, Bezner Kerr RN, Lane C, Kassim N, Martin H, Mtinda E, Lupafya E, Young SL. A mixed-methods exploration of the role of participation in a nutrition-sensitive agroecology intervention in rural Tanzania. *Curr. Dev. Nutrition.* 2022. Under review.

**ACKNOWLEDGEMENTS**

We warmly acknowledge of the Singida farmers who worked with us all throughout the study and the enumerators and research assistants from Nelson Mandela Institution of Science and Technology (NMAIST) and Singida District Council for their tremendous contributions during data collection.