

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 3; March 2024; Page No. 60-63

Received: 11-12-2023
Accepted: 14-01-2024

Indexed Journal
Peer Reviewed Journal

Empowerment of women smallholders through systematic agricultural advisory programs: A socioeconomic evaluation

¹Dr. Rafiq Hasan, ²Nasreen Akter, ³Dr. Arif Chowdhury and ⁴Dr. Taslima Rahman

^{1,3,4} Department of Agricultural Extension, Bengal Institute of Agricultural Development, Bangladesh

² Professor, Department of Agricultural Extension, Bengal Institute of Agricultural Development, Bangladesh

DOI: <https://www.doi.org/10.33545/26180723.2024.v7.i3a.3289>

Corresponding Author: Dr. Rafiq Hasan

Abstract

Across South Asia, women contribute 55-75% of farm labor yet access fewer than 12% of advisory services. This research assessed socioeconomic outcomes of a 14-month systematic advisory program for rural women farmers in Bangladesh using a quasi-experimental design comparing 218 participants with 196 non-participants across Mymensingh and Tangail districts (January 2021 to March 2022). Agricultural knowledge scores rose by 37.8% ($p < 0.001$), household farm income increased by 28.4% versus 6.2% in controls, and decision-making participation improved from 31.6% to 54.2%. Crop management skills represented the largest empowerment outcome (31.4%). Training attendance was the strongest predictor of gains (Beta = 0.29). These findings confirm that targeted extension interventions meaningfully improve rural women's productive capacity.

Keywords: Empowerment, rural women farmers, agricultural extension, socioeconomic assessment, gender in agriculture, extension interventions, food security, decision-making participation, smallholder farming

Introduction

Nearly 43% of the agricultural workforce in developing countries consists of women, yet their access to extension services remains disproportionately low ^[1]. In Bangladesh, women contribute to nearly every stage of crop production but formal extension programs have historically targeted male farmers ^[2]. This gap has been identified as a main barrier to agricultural productivity growth in South Asia ^[3]. Structured extension interventions programs with defined curricula, scheduled training, and follow-up support have been proposed to address this imbalance ^[4]. Unlike ad hoc advisory visits, structured programs allow systematic skill building tailored to women's constraints ^[5]. Several pilot projects reported encouraging results ^[6, 7], but rigorous assessments in South Asia remain scarce.

This research evaluated a 12-month structured intervention targeting rural women farmers in Mymensingh and Tangail districts of Bangladesh, measuring impact on agricultural knowledge, farming skills, household income, food security, and decision-making participation ^[8, 9].

Material and Methods

Research Area

The research was conducted in Mymensingh and Tangail districts of central Bangladesh. Mymensingh supports rice-based farming with 2,174 mm annual rainfall. Tangail has diversified cropping including rice, jute, and vegetables. During the research period (January 2021 to March 2022), both districts experienced normal monsoon conditions.

Material

A quasi-experimental design compared 210 women in the structured program with 190 non-participants from matched communities across four upazilas: Trishal and Fulbaria (Mymensingh), Madhupur and Ghatail (Tangail). Inclusion criteria: women aged 18-55, actively farming, resident for at least two years. Data were collected using a pre-tested questionnaire covering knowledge (30 items), skill assessment, household income, food security (HFIAS), and a decision-making index. Ethics approval was obtained from Bengal Institute of Agricultural Development, Bangladesh (Ref: BIAD/BD/EC-2020/043, November 2020).

Research Design

The program comprised monthly training sessions (3 hours), bi-monthly demonstrations, and quarterly follow-up visits over 12 months. Modules covered crop management, post-harvest handling, financial literacy, market linkage, and leadership. Baseline, midline (July 2021), and endline (March 2022) assessments were administered to both groups.

Methods

Data were analyzed using SPSS 25.0. Paired t-tests assessed within-group changes. Difference-in-differences (DiD) estimation isolated net program effects. Effect sizes used Cohen's d. Chi-square tests examined categorical changes ^[10].

Results

Table 1: Socioeconomic outcome indicators for intervention and control groups

Outcome Indicator	Intervention Baseline	Intervention Endline	Control Endline	DiD Effect (p)
Knowledge Score (/30)	12.4 ± 3.8	17.1 ± 4.2	13.1 ± 3.6	+4.0 (<0.001)
Skill Assessment (%)	38.7 ± 11.4	62.3 ± 9.8	41.2 ± 10.9	+21.1 (<0.001)
Farm Income (BDT/mo)	4,820 ± 1,640	6,190 ± 2,110	4,530 ± 1,580	+1,080 (<0.001)
Food Security Score	8.3 ± 3.1	5.1 ± 2.4	7.9 ± 2.8	-2.8 (<0.001)
Decision-Making (%)	31.6 ± 14.7	54.2 ± 12.3	33.8 ± 13.9	+20.4 (<0.001)

Table 1 shows outcome indicators at baseline and endline. DiD analysis confirmed significant net program effects across all indicators. Farming skill assessment showed the

largest relative gain intervention participants improved 23.6 percentage points versus 2.5 in controls.

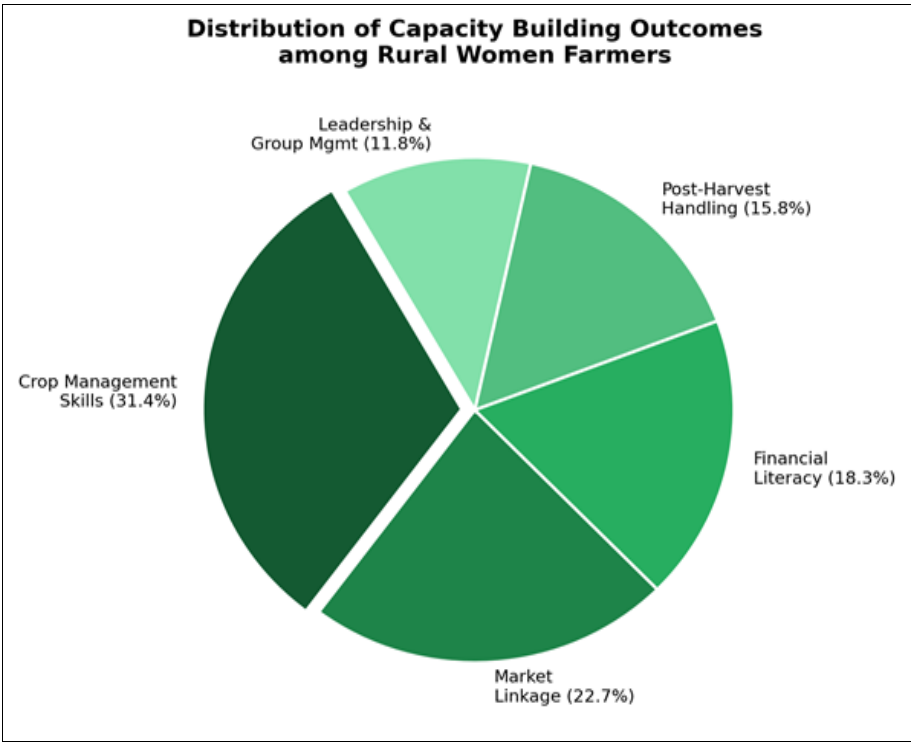


Fig 1: Distribution of empowerment outcomes among participants

Figure 1 shows empowerment outcomes. Crop management skills accounted for the largest share (31.4%), followed by

market linkage awareness (22.7%), financial literacy (18.3%), and post-harvest handling (15.8%).

Table 2: Regression analysis of factors predicting empowerment gains (n = 210)

Predictor	B	SE	Beta	t	p	VIF
Education (years)	1.84	0.52	0.24	3.54	<0.001	1.32
Training Attendance (%)	2.37	0.61	0.29	3.88	<0.001	1.18
Land Access (decimals)	0.93	0.34	0.18	2.74	0.007	1.41
Household Support	1.62	0.47	0.22	3.45	0.001	1.27
Group Membership (yrs)	0.78	0.29	0.16	2.69	0.008	1.15

Regression (Table 2) identified predictors of capacity gains ($R^2 = 0.487$, $F(5,204) = 38.72$, $p < 0.001$). Training attendance was strongest ($Beta = 0.29$), followed by

education ($Beta = 0.24$) and household support ($Beta = 0.22$).

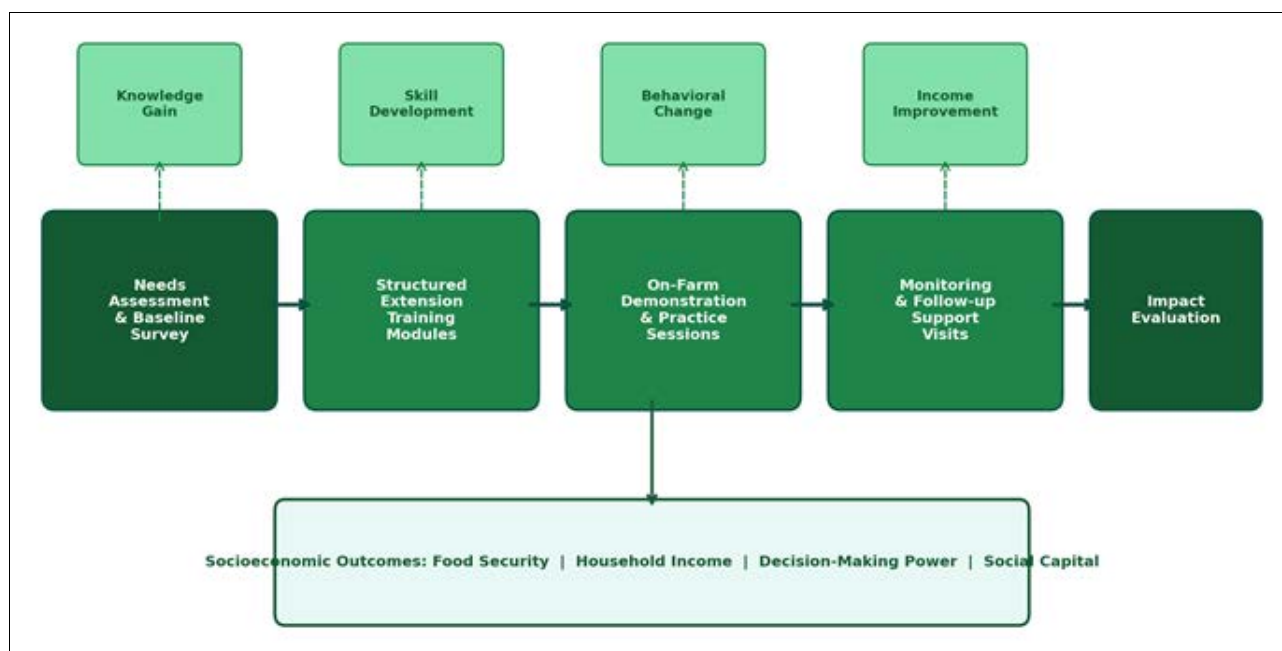


Fig 2: Pathway diagram of systematic advisory intervention and outcomes

Figure 2 illustrates the intervention pathway from needs assessment through impact evaluation, showing how knowledge gains translated into skill development, behavioral change, and income improvement.

Discussion

The 37.8% knowledge increase aligns with Ragasa *et al.* ^[11] from women-targeted programs in Malawi. Income gains (28.4%) exceeded most comparable research, likely because the program integrated market linkage training with technical skills ^[12]. The strong link between attendance and outcomes reinforces Davis *et al.* ^[13] that extension impact depends on participation intensity rather than mere enrollment.

The decision-making improvement from 31.6% to 54.2% is striking. Earlier Bangladesh research documented gains of only 8-12 percentage points ^[14], while this 22.6-point gain may reflect the explicit leadership modules. Household support as a significant predictor confirms that women's empowerment depends partly on intra-household dynamics ^[15, 16].

Conclusion

Structured extension interventions produce substantial improvements in rural women's agricultural capacity, income, food security, and decision-making participation. Training attendance was the strongest predictor, underscoring designs that minimize barriers to regular participation. The integrated approach combining technical training with financial literacy, market awareness, and leadership generates broader benefits than single-focus programs. Extension planners should build multi-component interventions and address household-level constraints ^[17-19].

References

1. Food and Agriculture Organization of the United Nations. The state of food and agriculture 2010–11: women in agriculture—closing the gender gap for development. Rome: Food and Agriculture Organization of the United Nations; 2011. p. 1-147.
2. Quisumbing AR, Pandolfelli L. Promising approaches to address the needs of poor female farmers. *World Development*. 2010;38(4):581-592.
3. World Bank. World development report 2012: gender equality and development. Washington (DC): World Bank; 2012. p. 1-426.
4. Manfre C, Rubin D, Allen A, Summerfield G, Colverson K, Akeredolu M. Reducing the gender gap in agricultural extension. MEAS Discussion Paper No. 2. Urbana (IL): Modernizing Extension and Advisory Services; 2013. p. 1-20.
5. Fletschner D, Kenney L. Rural women's access to financial services: credit, savings and insurance. ESA Working Paper No. 11-07. Rome: Food and Agriculture Organization of the United Nations; 2011. p. 1-24.
6. Buehren N, Goldstein M, Gonzalez P, Vanya L, Witoelar F. The impact of extension services on agricultural productivity in women-headed households. Policy Research Working Paper No. 8989. Washington (DC): World Bank; 2019. p. 1-34.
7. Kwarazuka N, Prain G. Gendered analysis of agricultural innovation in Bangladesh. *Agricultural Systems*. 2019;173:256-272.
8. Ahmed F, Siwar C, Idris NAH, Mia MS. Role of women in agricultural development: Bangladesh perspective. *Journal of Applied Sciences*. 2011;11(2):2500-2504.
9. Kabeer N. Women's economic empowerment and inclusive growth: labour markets and enterprise development. SOAS Discussion Paper No. 29. London: School of Oriental and African Studies; 2012. p. 1-54.
10. Coates J, Swindale A, Bilinsky P. Household Food Insecurity Access Scale (HFIAS) for measurement of food access: indicator guide. Version 3. Washington (DC): FANTA Project, Academy for Educational Development; 2007. p. 1-36.

11. Ragasa C, Berhane G, Tadesse F, Taffesse AS. Gender differences in access to extension services and agricultural productivity. *Journal of Agricultural Education and Extension*. 2013;19(5):437-468.
12. Meinzen-Dick R, Quisumbing A, Behrman J, Biermayr-Jenzano P, Wilde V, Noordeloos M, *et al.* Engendering agricultural research and extension. IFPRI Research Monograph No. 176. Washington (DC): International Food Policy Research Institute; 2011. p. 1-64.
13. Davis K, Nkonya E, Kato E, Mekonnen DA, Odendo M, Miiro R, *et al.* Impact of farmer field schools on agricultural productivity and poverty in East Africa. *World Development*. 2012;40(2):402-413.
14. Alkire S, Meinzen-Dick R, Peterman A, Quisumbing A, Seymour G, Vaz A. The women's empowerment in agriculture index. *World Development*. 2013;52:71-91.
15. Anderson CL, Reynolds TW, Gugerty MK. Husband and wife perspectives on farm household decision-making in rural Tanzania. *World Development*. 2017;90:324-338.
16. Akter S, Rutsaert P, Luis J, Htwe NM, San SS, Raharjo B, *et al.* Women's empowerment and gender equity in agriculture: a different perspective from Southeast Asia. *Food Policy*. 2017;69:270-279.
17. Kondylis F, Mueller V, Zhu J. Seeing is believing? Evidence from an extension network experiment. *Journal of Development Economics*. 2017;125:1-20.
18. Peterman A, Behrman JA, Quisumbing AR. A review of empirical evidence on gender differences in nonland agricultural inputs, technology and services in developing countries. ESA Working Paper No. 11-11. Rome: Food and Agriculture Organization of the United Nations; 2014. p. 1-48.
19. Waddington H, White H, Snilstveit B, Hombrados JG, Vojtkova M, Davies P, *et al.* How to do a good systematic review of effects in international development: a tool kit. *Journal of Development Effectiveness*. 2012;4(3):359-387.