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A Participatory Agroecological Intervention Reduces Women's Risk of Probable Depression Through Improvements in Food Security in Singida, Tanzania

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Objectives: In 2015, depressive disorders led to over 50 million disability-adjusted life years lost globally, with more than 80% occurring in low- and middle-income countries. Depressive disorders are also risk factors of a number of adverse maternal and child health outcomes. To our knowledge, the Singida Nutrition and Agroecology Project (SNAP-Tz), is the first nutrition-sensitive agriculture (NSA) intervention identified to improve women's probable depression (2020). Food security has been posited to play an important role in the relationship between NSA interventions and depression, yet causal factors have not yet been analyzed quantitatively. Therefore, we investigated food security's mediating role on this impact.

Methods: SNAP-Tz is a 30-month participatory agroecological intervention aimed to improve sustainable agriculture, nutrition and

gender equity in Singida, Tanzania. Food insecure, married, small-holder female farmers with children < 1-year-old at baseline ($n = 548$) were interviewed annually in Feb 2016–2019. We used multiple logistic regression models to estimate the total effect (TE) of the SNAP-Tz intervention on women's Center for Epidemiological Studies-Depression scores (CESD). We further estimated natural direct effects (NDE) to evaluate mediation through household food insecurity access score (HFIAS); these represent estimates of the effect of SNAP-Tz on CESD if everyone were to receive SNAP-Tz, thereby changing food insecurity (HFIAS).

Results: SNAP-Tz had a large impact on reducing CESD scores: odds of probable depression were 32% lower in SNAP-Tz women compared to the delayed intervention group after adjusting for gender equity measures and religion (TE OR = 0.68, 95% CI: 0.58–0.80). Mediation by HFIAS explained about one quarter of the intervention's impact (NIE OR = 0.90, 95% CI: 0.84–0.94).

Conclusions: Improvements in household food security seems to play a substantial mediating role in the strong and unexpected impact of NSA interventions on women's mental health. Other possible pathways include improvements in peer mentoring and farmer experimentation. Future agricultural and nutrition projects should include mental health evaluations to see if this impact can be generalized.

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