Household food insecurity and middle-aged women's health and psychosocial wellbeing in rural Mozambique

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Abstract

Food security is an essential dimension of health and wellbeing. Yet, few studies have examined the relationship between food insecurity and health and psychosocial wellbeing, including the mechanisms through which that relationship may occur. This study uses data from two waves of the Men's Migrations and Women's Lives longitudinal study conducted in rural southern Mozambique in 2017 and 2023 to examine the association of household food insecurity with middle-aged women's physical health and selected measures of psychosocial wellbeing. In the preliminary analyses, we find that continuous food insecurity is significantly associated with average or poor self-rated health (Odds Ratio (OR)=2.91, $p<0.01$) and poor psychosocial wellbeing (feeling depressed: OR=2.81, $p<0.01$; feeling nervous: 1.82, $p<0.01$; feeling less or not satisfied with life: OR=4.38, $p<0.01$; feeling at the bottom of the satisfaction ladder: OR=1.76, $p<0.01$), net of other factors. We detect little evidence of a mediating role of household material asset building.

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Introduction

Food security is an essential dimension of health and wellbeing. Yet, several countries in sub-Saharan Africa and the world suffer from food insecurity (FAO et al., 2023; World Bank, 2024). While for some countries and areas within countries food insecurity is an episodic occurrence, for others this phenomenon is almost recurrently or permanently experienced (WFP and FAO, 2023). Enduring food insecurity is likely to compromise both physical health and psychosocial wellbeing. Moreover, worries about future food insecurity could also impact health and psychosocial wellbeing. Household consumer material assets building could mediate a potential link between food insecurity and health and wellbeing. While on the one hand, building consumer assets could alleviate psychosocial consequences of food insecurity, on the other hand, building household consumer assets could take away resources that otherwise could have been used for abating food insufficiency and enhancing health and wellbeing. In poor agrarian settings as those of most of sub-Saharan Africa this could be particularly critical for households with fewer consumer assets who could face a dilemma of whether to use resources that they get for reducing food insufficiency or to build household consumer assets. Households' social ties, depending on their characteristics, could also mediate a potential link between food insecurity and health and wellbeing. For instance, favorable social ties could help households weather food shortages, and consequently, improve household residents' health and psychosocial wellbeing. Social ties could also provide informational and other non-material resources that could influence linkages between food insecurity, health and psychosocial wellbeing. Few studies have examined the potential relationship between food insecurity and health and psychosocial wellbeing in sub-Saharan Africa (Sorsdahl et al., 2010; Jebena et al., 2015; Jebena et al., 2017; Ae-Ngibise, 2021; Militao et al., 2022). A study of South African adults found that food insufficiency was associated with an elevated risk of anxiety and substance use disorders (Sorsdahl et al., 2010). Household food insecurity was linked to mental distress among pregnant women in Ethiopia (Jebena et al., 2015). Also in Ethiopia, a study of adolescents reported that household food insecurity was associated with poor self-rated health (Jebena et al., 2017). Moreover, despite the potential mediating role of household consumer asset building and social ties on the relationship between food insecurity and health and psychosocial wellbeing in agrarian settings where food insufficiency is common, few studies have directly examined these pathways in sub-Saharan Africa. In the study of adolescents in Ethiopia, Jebena et al. (2017) did not detect a statistically significant influence of social network and support on the relationship between food insecurity and self-rated health. It is unclear, however, how that relationship is among adults. Furthermore, most of the existing studies of the relationship between food insecurity and health and psychosocial wellbeing in sub-Saharan Africa have been cross-sectional (Ae-Ngibise, 2021; Militao et al., 2022). Yet, episodic and enduring experience of food insecurity could have differing influences on health and psychosocial wellbeing. A review of empirical studies on food insecurity and health outcomes among adults in southern Africa called for more research on the topic in countries without such studies, including Mozambique (Militao et al., 2022). In this study, we examine these relationships using unique longitudinal data from rural Mozambique. We seek to answer the following research questions: Does food insecurity have a link with self-rated physical health and psychosocial wellbeing? Do household material asset building and social ties mediate this relationship?

Data and Methods

Data for this study are from wave 5 and wave 6 of a household survey of the Men's Migrations and Women's Lives (MMWL) longitudinal project collected in four predominantly rural districts in the South of Mozambique with approximately 700,000 inhabitants, suffering from food insecurity (Cau and Agadjanian, 2023). The initial data collection in the area took place in 2006 (wave 1) following a multistage sampling process in which 56 villages (14 per district) were first randomly selected, and then 30 women aged 18-40 married to migrants or non-migrants were chosen in each of those villages for interview (Agadjanian, Arnaldo and Cau, 2011). Wave 2 and wave 3 took place in 2009 and 2011. In these waves, the sample was refreshed and expanded. Wave 4 using a shorter instrument took place in 2014. Wave 5 took place in 2017/2018 and data for wave 6 was largely collected in 2023 (although interviews via phone are still ongoing for women who could not be found at their original villages). Both wave 5 and wave 6 collected diverse socioeconomic and demographic information including about household food security status. Wave 6 in particular collected diverse information on women's social ties and their psychosocial wellbeing. The total sample size for the wave 5 was constituted by 1891 women. The dataset for wave 6 women has 1762 women. Of these women, 1633 were interviewed in both wave 5 and wave 6.

For physical health, our outcome is self-rated health. It is based on a standard question asking respondents to rate their physical health. It is was coded as a binary categorical variable: average or poor self-rated health versus good or excellent. We use four outcomes of psychosocial wellbeing: feeling depressed (past seven days: sometimes or often vs. few times or never); feeling nervous (past 4 weeks: sometimes or often vs. never); feeling generally less or not satisfied with life; and, feeling oneself on the bottom two steps of the life satisfaction ladder (with 10 possible steps: 1 indicating worst and 10 the top of possible life satisfaction for a respondent). Our main predictor is long-time household food security status. In both wave 5 and wave 6 respondents were asked a battery of questions capturing food security status of their households. We created four measures of household food security status: 1) Households continuously food secure – those who were classified as food secure in both wave 5 and wave 6; 2) Households periodically food secure – those that were food secure in one of the waves – i.e., wave 5 or wave 6; 3) Households continuously quasi-food insecure – those who were classified as somewhat food insecure in both wave 5 and wave 6 or were quasi-food insecure in one of the waves and food insecure in the other; and, 4) Households continuously food insecure – those that were food insecure in both wave 5 and wave 6. In these preliminary analyses we used the household's asset building indicator based on wave 5 as a mediator. It is an addictive measure composed of a household having following housing conditions and consumer assets in a working condition: household having electricity, housing walls made up of blocks, bricks or wood and zinc, household having a safe source of drinking water, household having a radio, household having a wood or metal mattress and household having a phone (wave 5). In these analyses we control for household size (excluding women and their husbands if they were married – wave 5), women's age, education and marital status (wave 5). For these preliminary analyses we fit multi-level logistic regression models. For each outcome we have three models. Model 1 is the baseline and it controls only for household size. Model 2 adds a measure of a household's consumer asset building and Model 3 is a full model adding other women's demographic and socioeconomic controls. The analyses considered only cases with complete information on variables of interest for each outcome. Analyses were carried out using Stata software.

Preliminary Results

Table 1 shows preliminary findings of the association between food insecurity and respondents' health and psychosocial wellbeing. Panel A shows preliminary findings for self-rated health. It indicates that women from households experiencing continuous food insecurity or quasi-food insecurity are substantially more likely to have average or poor self-rated health (Odds Ratio (OR)= 2.87 and 2.10, respectively; $p<0.01$). Model 2 of Panel A adds the indicator of household consumer assets building. Although not being statistically significant, its inclusion in the model exacerbates the effects of continuous food insecurity or quasi-food insecurity on self-rated health. In Model 3 with other control variables, we find that enduring food insecurity or quasi-food insecurity continues to have a substantial net influence on average or poor self-rated health. Panels B to E, present preliminary findings for indicators of psychosocial wellbeing: feeling depressed; feeling nervous; feeling generally less or not satisfied with life; and, feeling oneself on the bottom two steps of the satisfaction ladder. For feeling depressed, findings show that those from households with permanent food insecurity or quasi-food insecurity have Odds of feeling depressed that are more than 2 times higher in comparison with their peers from food secure households. Interestingly, for feeling nervous we detect a statistically significant relationship for those from households with continuous quasi-food insecurity (Panel C). Findings for general satisfaction with life (Panel D) show a substantial influence of continuous food insecurity or quasi-food insecurity, with women in households continuously food insecure and those in continuously quasi-insecure households displaying higher Odds of feeling less or not satisfied with their life compared to the reference group ($p<0.01$). Panel E shows that enduring food insecurity is also associated with the likelihood of feeling oneself at the bottom of the life satisfaction ladder, net of other factors. As for the potential mediating role of household consumer asset building, it appears to be notably that for most outcomes, household consumer asset building does not show a mediating effect.

Next Steps

To prepare the paper for the African Population Conference we will expand our conceptualization of the potential links between long-time food insecurity and health and psychosocial wellbeing. We will also add full analyses of social ties as potential mediators. We will also refine our model specifications by adding village and individual and household characteristics that could potentially impact the relationship between food insecurity and health and psychosocial wellbeing.

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Table 1. Multi-level logistic regression of the association between food insecurity, health and psychosocial well-being, preliminary results.

Covariates	Odds Ratios														
	A: Average or Poor Self-rated Health			B: Felt Depressed			C: Felt Nervous			D: General Life Satisfaction: less or not satisfied			E: Feels at Bottom of the Satisfaction Ladder		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
HH's Food security status (wave 5 & wave 6)															
HH continuously food secure (i.e., food secure in both wave 5 and wave 6) (Ref.)	1	1		1	1		1	1		1	1	1	1	1	1
HH periodically food secure (i.e., is food secure at least in one of W5 or W6)	1.44	1.45	141	1.57	1.57	1.57	1.54	1.55	1.55	1.84	1.83	1.82	1.35	1.23	1.22
HH continuously quasi-food insecure	2.10*	2.12*	2.16*	2.48**	2.47**	2.44**	2.00*	2.04**	2.11**	3.54**	3.53**	3.54**	1.73*	1.49	1.45
HH continuously food insecure	2.87**	2.92**	2.91**	2.88**	2.88**	2.81**	1.65	1.72	1.82*	4.30**	4.27**	4.38**	2.31**	1.76*	1.69
HH housing conditions and assets index (wave 5)		1.01	1.02		1.00	1.02		1.03	1.00		1.00	0.99		0.84**	0.86**
Controls															
Age			1.13			0.89			1.00			0.89			0.96
Age Squared			1.00			1.00			1.00			1.00			1.00
Woman's education															
5 years or more (Ref.)			1			1			1			1			1
1-4 years			0.78			1.19			0.80			0.96			1.11
No education			0.72			1.28			0.55*			0.68			1.52*
Woman's marital status															
Not married			1.13			1.18			0.87			1.27			1.37*
HH Size (wave 5)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98	0.98	1.00	0.96*	0.97	0.98
Intercept	0.18**	0.17**	0.00	0.22**	0.22**	2.59	0.24**	0.22**	0.20	0.10**	0.10**	1.46	0.39*	0.82	1.92
Village level random intercept (variance)	0.09*	0.09*	0.07*	0.00	0.00	0.00	0.36*	0.36*	0.30*	0.12*	0.12*	0.09	0.02	0.02*	0.04*
N	1482	1482	1482	1482	1482	1482	1478	1478	1478	1481	1481	1481	1465	1465	1465

Notes: Ref.=Reference; HH= household; Significance * - p<0.05; ** - p<0.01.