

Women's Knowledge, Participation in Village Savings And Loan Associations and Household Security in Tausa Sub- Location, Kenya

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DOI: <https://dx.doi.org/10.47772/IJRISS.2026.100400297>

Received: 12 April 2026; Accepted: 17 April 2026; Published: 06 May 2026

ABSTRACT

Village Savings and Loan Associations (VSLAs) aim to improve women's financial inclusion and household welfare in rural Kenya, yet evidence on how knowledge influences participation and how participation affects food security is limited.

Objective:

This study examined the association between women's knowledge of VSLAs and membership, and the relationship between membership and household food security in Tausa Sub-Location, Taita Taveta County.

Methods:

A community-based cross-sectional survey was conducted among 464 women. Data included socio-demographic characteristics, VSLA knowledge, membership and household food security measured using the Food Insecurity Experience Scale (FIES). Chi-square tests and t-tests explored associations between knowledge, participation and food security. Binary logistic regression identified association between knowledge and participation while ordered logistic regression and propensity score analysis assessed the association between membership and household food security.

Results:

Higher knowledge of VSLAs was strongly associated with participation ($\chi^2=452.10$, $p<0.001$; OR=2,105). Age, marital status, household size, income source, and land ownership were also significant predictors. VSLA members reported higher food insecurity than non-members (mean FIES 2.39 vs 2.18; $t=-2.49$, $p=0.013$), a pattern confirmed by ordered logistic regression (OR=1.69, $p=0.004$) and propensity score analysis, reflecting the targeting of vulnerable households.

Conclusion:

Knowledge strongly drives VSLA participation, which is concentrated among already food-insecure households. VSLAs act as coping and resilience mechanisms rather than directly improving food security. Policies should reduce knowledge and participation barriers and integrate VSLAs with public health, nutrition and social protection interventions to strengthen household resilience.

Keywords: Village Savings and Loan Associations (VSLAs); Women's participation; Food insecurity; Knowledge and awareness; Propensity score matching; Public health nutrition.

INTRODUCTION

Household food insecurity remains a persistent public health and development challenge in sub-Saharan Africa, disproportionately affecting rural communities where livelihoods are highly sensitive to climatic, economic and

institutional shocks [1][2]. Despite global commitments under the Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 5 (Gender Equality), progress in reducing food insecurity has been uneven [3][4]. Rural women continue to bear a disproportionate burden of food provisioning under conditions of limited access to productive resources and financial services. In Kenya, recurrent droughts, declining agricultural productivity and constrained rural incomes have sustained high levels of food insecurity, particularly in arid and semi-arid lands (ASALs) where households rely heavily on subsistence agriculture and informal coping mechanisms [5].

Women play a central role in household food security through food production, income management and intra-household allocation of resources [6]. However, structural barriers such as limited access to formal credit, land ownership constraints and low financial inclusion continue to restrict women's capacity to stabilize household consumption and respond to food shocks [7]. Enhancing financial access through community-based institutions has emerged as a critical pathway to improving food security and household welfare [8]. In response, community-based financial models have gained prominence as locally embedded mechanisms for enhancing women's economic agency. Among these, Village Savings and Loan Associations (VSLAs) have emerged as one of the most widespread and accessible forms of informal finance across rural Africa [9][10]. Built on pooled savings, internal lending and collective governance, VSLAs aim to overcome exclusion from formal financial systems while strengthening social capital and resilience among marginalized populations [11].

Empirical evidence suggests that VSLA participation can improve access to savings and credit, smooth consumption, support income-generating activities and enhance women's decision-making power [12]. These pathways are widely assumed to translate into improved household welfare, including food security. Yet, empirical findings remain mixed. While some studies report positive associations between VSLA participation and food availability, others observe limited effects, particularly in highly vulnerable contexts where VSLAs function more as coping mechanisms than engines of sustained livelihood transformation [13]. Women with greater exposure to information, social networks and prior financial experience may be more likely to understand and join VSLAs, while those facing deeper vulnerability may remain excluded to participate under constrained conditions. The relationship between VSLA participation and household food security is rarely linear. Women who join VSLAs may already be more food insecure at baseline, using savings groups as a risk-coping strategy rather than a pathway out of vulnerability. Failure to account for this selection dynamic risks overstating and misinterpreting the welfare effects of participation.

In this context, the relationship between VSLA membership and food security outcomes remains nuanced. While descriptive studies show higher dietary diversity among members, unobserved selection factors may bias these estimates, making causal inference challenging. Women from smaller family sizes and stronger social networks may self-select into VSLAs, creating systematic differences between participants and non-participants [14]. Consequently, rigorous econometric approaches that account for both observable and unobservable determinants of participation are essential to isolate the true impact of VSLAs on household food security. Taita Taveta County, located in Coastal Kenya, exemplifies these dynamics. The county is characterized by high dependence on rain-fed agriculture, recurrent climate shocks and persistent rural poverty [15].

Tausa Sub-Location in Voi Sub-County experiences acute food insecurity, driven by erratic rainfall, limited livelihood diversification and constrained access to financial services. Women in Tausa region shoulder primary responsibility for household food provisioning, yet their economic opportunities remain limited. While VSLAs operate widely within the area and are promoted as instruments for women's empowerment and food security, empirical evidence on how women's knowledge and participation in these groups translate into household food security outcomes remains scarce.

This study addresses this gap by examining the pathways linking women's socio-economic characteristics, participation in VSLA activities and household food security in Tausa Sub-Location. Specifically, the study seeks to (i) assess the association between women's socio-economic characteristics and their knowledge of VSLAs, (ii) examine how knowledge of VSLAs influences women's participation in these associations, and (iii) determine whether and how women's participation in VSLAs is associated with household food security. The study provides evidence on the food security implications of VSLA participation in a setting characterized by high baseline vulnerability. It generates policy-relevant insights for integrating community-based financial models

with broader food security and social protection strategies at the county level. In doing so, the study offers empirical evidence that is directly relevant to policymakers, development partners and public health stakeholders seeking to leverage women-centered financial interventions as part of holistic strategies to address food insecurity in rural Kenya and similar contexts across Sub-Saharan Africa (SSA).

METHODS

Study design and area

This study employed a community-based cross-sectional design conducted in Tausa Sub-Location, located within Voi Sub-County of Taita Taveta County. The area lies within an arid and semi-arid ecological zone characterized by erratic rainfall, high dependence on rain-fed agriculture and limited livelihood diversification. These conditions contribute to persistent household food insecurity and make the area a relevant setting for examining the role of community-based financial mechanisms in supporting household resilience.

Sampling procedure, target population and sample size

The study population comprised adult women residing in Tausa Sub-Location at the time of data collection. Both women who were members of VSLAs and those who were not involved in any VSLA were included to enable comparative analysis. A total sample of 464 women was surveyed. VSLA members were identified through existing savings groups operating in the area, while non-members were identified using snowball sampling within the same communities to ensure socio-economic comparability. Eligibility criteria included residency in the study area and willingness to provide the requisite information.

Data collection and instruments

Data were collected using a structured, interviewer-administered questionnaire designed to capture women's socio-demographic characteristics, participation in VSLA activities and household food security. The questionnaire was developed based on existing literature and adapted to the local context. It was pre-tested to ensure clarity, cultural appropriateness and reliability after which minor adjustments were made. Socio-demographic variables included age, marital status, education level, household size, land ownership and primary source of income. VSLA participation was measured as current membership status, with additional questions on loan uptake and use among members. Household food security was measured using the Food Insecurity Experience Scale (FIES), a validated experience-based indicator that captures the severity of food insecurity.

Ethical considerations

Ethical approval for the study was obtained from the relevant institutional ethics review board. Authorization to conduct the study was granted by national and county authorities. Participation was voluntary, and written informed consent was obtained from all respondents prior to data collection. Confidentiality and anonymity were ensured by assigning unique identifiers to respondents and restricting access to the dataset to the research team only.

Theoretical framework

This study is grounded in household utility maximization and collective action theory, which posit that households make participation decisions by comparing expected benefits and costs under existing constraints [16]. In rural settings, participation in Village Savings and Loan Associations (VSLAs) represents an institutional choice through which households seek smooth consumption, relax liquidity constraints and manage risk. A household is expected to join a VSLA when the anticipated gains from improved access to savings, credit and social networks outweigh the associated transaction and opportunity costs. Within this framework, VSLA membership is a non-random, self-selected decision influenced by socio-economic characteristics. These factors shape both the likelihood of participation and households' capacity to translate financial access into improved welfare outcomes. Social learning and peer effects further reinforce participation, as information and trust spread through community networks.

Data analysis

Data were analysed using Stata statistical software. Descriptive statistics were first generated to summarize women’s socio-demographic characteristics and key study variables. Bivariate analyses, including chi-square tests, were conducted to explore associations between women’s characteristics as well as association between VSLA participation and household food security.

Multivariate analysis proceeded in three stages. Logistic regression was used to assess the women’s participation in VSLAs. Ordered logistic model was used to examine the relationship between VSLA participation and household food security, reflecting the ordinal nature of food security categories derived from the FIES. Models were estimated both with and without controls for socio-demographic characteristics to assess the robustness of the observed associations. All statistical tests were conducted at a 5% significance level. The binary logistic model used was specified as follows:

Let $VSLA_i$ denote the VSLA participation status of household i , defined as a binary variable:

$$VSLA_i = \begin{cases} 1 & \text{if household } i \text{ participates in a VSLA} \\ 0 & \text{otherwise} \end{cases}$$

The decision to participate in a VSLA is modeled as a latent utility maximization process:

$$VSLA_i^* = Z_i' \gamma + \varepsilon_i$$

where:

- $VSLA_i^*$ is an unobserved latent variable representing the net benefit from VSLA participation,
- Z_i is a vector of observed household and respondent characteristics,
- γ is a vector of parameters to be estimated,
- ε_i is a stochastic error term.

RESULTS AND DISCUSSION

Socio-Demographic and Economic Characteristics of Women in Tausa Sub-Location

Table 1 VSLA membership among women in Tausa Sub-Location varies systematically across demographic and socio-economic characteristics, revealing clear patterns in who participates. Participation increases markedly with age, with very low membership among younger women and substantially higher engagement among middle-aged and older women. Women aged 60 years and above show the highest participation rates, suggesting that savings groups become more relevant as financial responsibilities accumulate and livelihood risks intensify over time.

Educational attainment in contrast, does not strongly differentiate participation. Women with primary, secondary and tertiary education participate at broadly comparable levels, indicating that VSLAs remain accessible across educational backgrounds and do not depend heavily on formal schooling. Marital status shows a more pronounced pattern. Divorced and widowed women are most likely to be members, followed by married women while single women participate the least. This suggests that women with greater independent economic responsibility, particularly those without spousal financial support rely more heavily on collective financial mechanisms. A similar pattern emerges with parity. Women with more children are considerably more likely to participate than those with none or one child, reflecting the financial demands associated with larger families and the need for mechanisms that help manage household consumption.

Household size further reinforces this relationship. Membership rises steadily with the number of household members, with the highest participation observed among women in large households. Larger families face higher and more variable consumption needs, making savings groups an important tool for managing financial pressure and uncertainty. Women engaged in farming which is the dominant economic activity in the area form the largest share of members, followed by those involved in business. By contrast, women without independent income sources are substantially less likely to participate, suggesting that while financial need motivates membership, some degree of income stability may be necessary to sustain regular contributions. Monthly income levels themselves show no strong gradient in participation, indicating that livelihood engagement and household responsibilities matter more than absolute income.

Land ownership is another important differentiating factor. Women who own land are far more likely to be VSLA members than those who do not, likely reflecting both economic engagement in agriculture and stronger community embeddedness. Overall, the descriptive evidence indicates that VSLA membership is most prevalent among women with greater household responsibilities, stronger livelihood engagement and higher exposure to economic risk. Participation appears to be shaped less by education or income alone and more by the practical financial demands of managing households, supporting dependents and sustaining livelihoods in a resource-constrained rural setting.

Table 1: Characteristics of women in Tausi Sub-Location

Variable	Categories	N	%	n	%	N	value
Age							
							109.76
							(11)
							,<0.00
	<20	0	0%	2	100%	2	1
	20-24	4	19%	17	81%	21	
	25-29	4	8%	47	92%	51	
	30-34	9	23%	31	78%	40	
	35-39	16	44%	20	56%	36	
	40-44	23	61%	15	39%	38	
	45-49	29	54%	25	46%	54	
	50-54	43	68%	20	32%	63	
	55-59	22	59%	15	41%	37	
	60-64	30	77%	9	23%	39	
	65-69	33	83%	7	18%	40	
	70 and above	33	77%	10	23%	43	

Education								
Level								
								6.45(3)
	None	10	56%	8	44%		18	, 0.091
	Primary	128	59%	90	41%		218	
	Secondary	85	49%	89	51%		174	
	Tertiary	23	43%	31	57%		54	
Marital Status								
								26.92(2),
	Married	154	54%	129	46%		283	<0.001
	Single	26	31%	59	69%		85	
	Divorced/Wido							
	wed	66	69%	30	31%		96	
Parity								
								32.83(2),
	Nulliparous	10	22%	36	78%		46	<0.001
	Primiparous	23	36%	41	64%		64	
	Multiparous	213	60%	141	40%		354	
Household								
Size								
							13.77(3),	
1	9	35%	17	65%	26		0.003	
1-3	79	48%	87	52%	166			
4-6	126	55%	103	45%	229			
More than 6	32	74%	11	26%	43			
Main Source of Income								
								52.77(3),
Farmer	152	69%	68	31%	220		<0.001	
Business	30	55%	25	45%	55			
Employment	33	40%	50	60%	83			
None	31	29%	75	71%	106			
Monthly								
Income								

						4.21(3)
<10,000	209	55%	173	45%	382	, 0.239
10,000-20,000	30	47%	34	53%	64	
20,001-30,000	7	44%	9	56%	16	
>30,000	0	0%	2	100%	2	
Land						
Ownership						
						24.67(
						1),
Yes	228	58%	166	42%	394	<0.001
No	18	26%	52	74%	70	

Source: Field survey 2023

Association between women’s knowledge of VSLAs and their involvement in VSLAs in Tausa Sub-Location

The findings provide strong and consistent evidence that women’s knowledge of Village Savings and Loan Associations (VSLAs) is a critical determinant of their participation. Pearson’s chi-square test revealed a highly significant association between awareness of VSLAs and membership status ($\chi^2(2) = 452.10, p < 0.001$). Membership was almost exclusively concentrated among women who reported being very aware of VSLAs, while those with moderate or no awareness were overwhelmingly non-members. A similar pattern emerged for awareness of VSLA services, which was also strongly associated with participation ($\chi^2 = 346.13, p < 0.001$). These findings indicate that knowledge is not merely correlated with participation but is practically a precondition for it.

The strength of this relationship was further confirmed by binary logistic regression analysis, which demonstrated that women with high knowledge of VSLAs and their services were dramatically more likely to be members compared to those with low knowledge (Odds ratio =2106, $p < 0.001$). The model explained a substantial proportion of variation in membership (Pseudo R^2

= 0.8175), indicating that knowledge accounts for a large share of women’s participation decisions. Taken together, these results show that information access and understanding of village savings and loan associations (VSLA) operations function as powerful enabling mechanisms for participation. Women who are well informed about the structure, benefits and services of VSLAs are substantially more likely to engage, suggesting that participation is strongly knowledge-mediated. Therefore, knowledge is therefore a necessary but not always sufficient condition for participation; it interacts with financial capability, social norms, and livelihood stability to shape actual engagement. This study agrees with another study conducted in Ghana by (17) where membership to VSLAs was found to have a statistically significant relationship with knowledge of VSLA.

Table 2: Binary Logistic Regression of Knowledge of VSLA against VSLA Membership

Pearson χ^2 , p-

Variable	Categories	VSLA Membership				Total (n)	value
		Yes		No			
Awareness of VSLAs							
Very Aware		246	99%	3	1%	249	452.10

Moderately Aware	0	0%	71	100%	71	<0.001
Not Aware	0	0%	144	100%	144	
Awareness of VSLA Services Very Aware	234	92%	20	8%	254	346.13,
Moderately Aware	12	9%	123	91%	135	<0.001
Not Aware	0	0%	75	100%	75	

Source: Field data 2023

Relationship between women’s involvement in VSLAs and household food security Contrary to the commonly held expectation that participation in Village Savings and Loan Associations (VSLAs) improves household food security, the findings reveal the opposite pattern. Across multiple analytical approaches, VSLA members reported significantly higher levels of food insecurity than non-members. The distribution of food security status differed significantly by membership ($\chi^2(3) = 11.76, p = 0.008$), with severe food insecurity disproportionately concentrated among members. Mean comparisons further confirmed that VSLA participants had significantly higher food insecurity scores than non-participants ($p = 0.013$). Similarly, ordered logistic regression indicated that members were more likely to fall into higher food insecurity categories ($OR = 1.69, p = 0.004$), although the explanatory power of the model was modest.

At first glance, these results appear counterintuitive, particularly given the widespread policy and development narrative positioning VSLAs as instruments for improving household welfare. However, a closer examination of the evidence suggests that the observed association does not reflect a detrimental effect of participation. Rather, it reflects systematic selection into VSLAs by households already experiencing heightened economic vulnerability. In this setting, the higher prevalence of food insecurity among members therefore reflects pre-existing deprivation rather than the causal consequences of participation. These results therefore challenge simplistic assumptions about the welfare effects of community-based financial groups and underscore the importance of accounting for selection dynamics when evaluating their outcomes. In highly vulnerable settings such as Tausa Sub-Location, participation should be understood not as a marker of improved well-being, but as an indicator of households actively seeking mechanisms to manage risk, stabilize consumption and navigate persistent food insecurity.

Table 3: Chi-square Test of Association between VSLA Membership and Household Food Security Level Food Security Status **Non-VSLA**

Members (n=218)

VSLA Members (n=246)

Total (n=464)

Pearson $\chi^2(df), p$ -value

Secure	12 (5.5%)	11 (4.5%)	23 (5.0%)
Mildly Insecure	41 (18.8%)	37 (15.0%)	78 (16.8%)
Moderately Insecure	61 (28.0%)	43 (17.5%)	104(22.4%)
Severely Insecure	104 (47.7%)	155 (63.0%)	11.76(3),0.008 259 (55.8%)
Total	218 (100%)	246 (100%)	464 (100%)

Source: Field data 2023

Propensity score matching analysis of food security levels by VSLA membership

To further assess whether differences in household food security between VSLA members and non-members reflected underlying socio-demographic differences, a propensity score matching (PSM) framework was applied. This approach compares women with similar observable characteristics, thereby reducing selection bias and improving the credibility of group comparisons.

The matched comparison indicates a statistically significant difference in mean food security levels between the two groups. The mean food security index among non-members was 2.39 compared to 2.18 among VSLA members, yielding a mean difference of -0.211 (95% CI: -0.378 to -0.045). The t-statistic of -2.49 and corresponding p-value of 0.013 indicate that this difference is statistically significant at the 5% level. These results suggest that after accounting for observable socio-demographic characteristics, VSLA members exhibit significantly higher levels of reported food insecurity compared to non-members. These results differ with existing literature showing that access to community-based savings and credit programs improves household welfare by enabling greater flexibility in household resource allocation, reducing vulnerability to shocks and facilitating the purchase of a wider variety of foods (18)[19][20].

Table 4: Propensity score matching results

VSLA Membership	Observation	Mean	Std. Err.	Std. Dev.	95% Confidence Interval
No	218	2.3902	0.0627	0.9259	[2.0553, 2.3025]
Yes	246	2.1789	0.0574	0.9002	[2.2772, 2.5033]
Combined	464	2.2909	0.0426	0.9175	[2.2073, 2.3746]
				[-0.3781,	-
Difference	-0.2113		0.0849	0.0446]	

Source: Field survey 2023

CONCLUSION

This study shows that women’s knowledge of Village Savings and Loan Associations (VSLAs) strongly predicts their participation in these groups, with well-informed women being substantially more likely to become members. Membership itself is shaped by socio-demographic and household characteristics, including age, marital status, household size, land ownership and main source of income. These findings highlight the dual importance of information access and structural factors in enabling women’s engagement with community-based financial mechanisms. Crucially, membership in VSLAs is strongly associated with higher reported levels of household food insecurity, even after controlling for socio-economic characteristics through propensity score matching. These findings indicate that VSLAs primarily attract women from households already experiencing vulnerability, functioning as mechanisms for consumption smoothing, financial resilience and social support rather than as immediate pathways to improved food security. From a public health perspective, this underscores the importance of recognizing VSLAs as both economic and psychosocial interventions that buffer women and their households against shocks, rather than direct instruments of nutritional improvement.

RECOMMENDATIONS

VSLA programs should prioritize inclusion, ensuring that women from highly food-insecure households especially widows, divorced women and those managing large families can participate through flexible contributions and staggered entry. Beyond financial access, VSLAs should be integrated with public health and nutrition initiatives, serving as platforms for maternal and child health education, nutrition promotion and livelihood support. Strengthening social networks is equally important: peer mentors, community champions and local mobilization can reduce information gaps and expand participation among the most vulnerable women. To maintain operational effectiveness, governments and development partners should provide light-touch regulation, financial literacy training and technical support, enabling VSLAs to act as resilience- building

institutions during periods of food insecurity and economic stress. Finally, continuous monitoring of household outcomes such as food insecurity experienced scale to be embedded in program design. This allows for timely identification of gaps, assessment of incremental improvements and alignment of VSLA activities with broader public health goals, ensuring that these groups contribute meaningfully to community nutrition and wellbeing.

Conflict of interest

The authors reported no potential conflict of interest.

Funding

This research work was not funded.

ACKNOWLEDGMENTS

The authors thank women groups in the area of study who aided us with essential information during the data collection exercise.

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