ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

Solidarity Mechanisms within VSLAs as a Catalyst for Community Health Insurance Uptake in Crisis-Prone Settings

Kayungura Tasinzanzu Godefroid[1]; Charles Wafula[2]; Samuel Tororei[3]

[1]PhD Student, Department of Community Health and Development, Great Lakes University of Kisumu, Kenya
[2]Professor, Department of Community Health and Development Community Health and Development, Great Lakes University of Kisumu, Kenya
[3]Professor, Department of Community Health and Development, Great Lakes University of Kisumu, Kenya

Publication Date: 2026/04/04

Abstract: Access to affordable and quality healthcare remains a major challenge in low- and middle-income countries, particularly in fragile and conflict-affected settings such as eastern Democratic Republic of Congo. Heavy reliance on out-of-pocket payments exposes households to catastrophic health expenditures and limits healthcare utilization. While Village Savings and Loan Associations (VSLAs) provide informal financial protection through solidarity mechanisms, their potential role in promoting health insurance uptake remains insufficiently understood. This study aimed to assess whether solidarity mechanisms within VSLAs can act as a catalyst for health insurance enrollment among members in Goma and surrounding areas.

A quasi-experimental design was employed, involving 420 VSLA members equally divided into intervention and control groups. Baseline data were collected between November 2024 and January 2025, followed by an endline survey after a three-month period of sensitization and training on health insurance integration. Data were gathered through structured interviews and analyzed using descriptive statistics, chi-square tests, and logistic regression to examine associations between solidarity participation and health insurance coverage.

At baseline, no statistically significant association was found between solidarity fund participation and health insurance coverage in either group ($p > .05$). Endline results showed only modest increases in coverage (+1.9% in the intervention group versus +0.5% in the control group), which were not statistically significant. Logistic regression analysis identified mode of payment as the only significant predictor of insurance uptake ($p < .001$), while duration in the group and benefiting from solidarity funds remained non-significant.

The findings suggest that although VSLA solidarity mechanisms strengthen financial resilience and social cohesion, they do not independently drive health insurance enrollment. Effective uptake requires stronger integration between community-based financial systems and formal insurance schemes, alongside improved affordability, sustained awareness, and strengthened trust in healthcare services.

Keywords: *Village Savings and Loan Associations (VSLAs); Solidarity Mechanisms; Health Insurance Uptake; Community-Based Health Insurance (CBHI); Financial Protection; Universal Health Coverage (UHC); Out-of-Pocket Payments; Health Financing; Crisis-Affected Settings; Democratic Republic of Congo (DRC); Social Protection; Microi-Nsurance; Health-Seeking Behavior.*

How to Cite: Kayungura Tasinzanzu Godefroid; Charles Wafula; Samuel Tororei (2026) Solidarity Mechanisms within VSLAs as a Catalyst for Community Health Insurance Uptake in Crisis-Prone Settings. *International Journal of Innovative Science and Research Technology*, 11(3), 3193-3203. https://doi.org/10.38124/ijisrt/26mar1529

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

I. INTRODUCTION

Many people experience difficult access to quality health care services due to lack of protection against financial risks in LMICs (Fadlallah et al., 2018). Lack of financial protection make some people when they are sick to either forgo or delay seeking health care and hence increase on burden of diseases (Mulaga et al., 2021). Access to health care is still a global challenge at a point that Health for All principles has become elusive. Within the Universal Health Coverage (UHC) paradigm, access is defined as the ability to obtain needed health services of sufficient quality without exposure to financial hardship (Samsudin & Prabowo, 2022). This definition is particularly relevant to the DRC context, where out-of-pocket (OOP) payments dominate health financing and contribute significantly to household impoverishment (Issa, 2023). Nearly 60% of respondents experienced catastrophic health expenditures (CHE), while around 30% had to borrow money to pay for some aspect of their medical treatment (Adeniran et al., 2023).

Despite the Abuja Declaration of 2001, which committed African governments to allocate 15% of national budgets to health, most countries have failed to meet this target (Chipman et al., 2017). For instance, in 2023, the share of the Democratic Republic of Congo's (DRC) state budget allocated to the health sector was 11.9% (see the Circular concerning the implementation of the Finance Law for the 2023 fiscal year). Although this figure represents an increase compared to previous years (7% in 2019), it remains below the 15% target set by the Abuja Declaration.

At the other hand, in a country where more than 70% of the population operate in the informal sector, CBHI schemes cover only 5–10% of populations in Sub-Saharan Africa and South Asia, compared to 20–60% in middle-income countries (Deville et al., 2018). This disparity highlights the urgent need for innovative, community-based risk-pooling mechanisms.

On the absence of viable mechanism of including these people in the insurance scheme, households have to seek for alternatives to finance their health care. Such alternatives may include income from family members, savings or financial support from religious organizations, relatives, or other sources that are non-refundable. Other alternatives include sales of household properties including land, livestock, jewellery, borrowing from financial institutions or individuals (Kasahun et al., 2020). In this line, VSLAs can play an increasing role as catalyst of integration of community-based health insurance through its component of solidarity mechanism in the low income families. The purpose of the study is to assess how solidarity mechanisms within VSLAs can act as a catalyst for health insurance enrollment among members in Goma and surrounding areas.

II. METHODOLOGY

- *Study Design, Approach and Setting*

This quasi-experimental study aimed to examine the impact of an awareness campaign on integrating health insurance into Village savings and credit associations (VSLAs) through solidarity mechanisms, one of the components of these kind of schemes. An initial survey was conducted in November 2024 and January 2025, followed by a final survey between mid-August and mid-September 2025, separated by a three-month period of training and awareness-raising activities. The survey covered three health districts in and around the city of Goma: Goma, Karisimbi, and Nyiragongo. For more than 30 years now, eastern DRC has been embarked in a war of aggression, and this study was conducted while the city was under threat and controlled by rebels.

- *Study Population and Sampling*

The study population consisted of members of Village Savings and Loan Associations (VSLAs) operating within the selected health zones. A Village Savings and Loan Association (VSLA) is a group of people who save together and take small loans from those savings groups meet weekly and members save through the purchase of shares (Habumuremyi et al., 2019). The village savings and loans associations (VSLAs), therefore, serve as a leading conduit for increasing investment, economic empowerment, and poverty reduction (Abdulai et al., 2022).

A total sample of 440 respondents was targeted for both groups. But, 420 respondents were actually contacted, equally divided between the intervention and control groups, with 210 people in each group. This sample was drawn from at least 41 volunteer associations (VSLAs) in the intervention group and 41 VSLAs in the control group, each association having a minimum of 25 members. Sampling was conducted using clusters within the VSLA groups. Within each selected association, approximately one-fifth of the members were chosen to participate in the survey. To ensure representative participation from active members, selected individuals had to have at least three years of membership to be eligible for this study.

- *Data Collection Methods*

This research employed a quantitative data collection approach based on structured interviews. Data were collected using a standardized questionnaire consisting of 26 closed-ended questions (11 of which are analyzed in this article), administered during face-to-face interviews with selected respondents. The variables examined in this article include general information such as gender, age, marital status, education level, housing tenure, occupation, and main sources of income. Also included are variables related to participation in a village savings scheme (VSLA), such as the duration of participation and the level of savings. Finally, variables related to health insurance were examined: health insurance coverage and willingness to enroll. The questionnaire was pretested prior

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

to field deployment to ensure clarity, consistency, and relevance to the local context. Interviews were conducted by trained enumerators experienced in surveying activities and familiar with the study area and local languages.

➢ *Data Analysis*

Data entry, processing, and analysis were performed using IBM SPSS Statistics 27.0 software. Descriptive statistics were used to summarize the sociodemographic characteristics of respondents, as well as variables related to participation in Village Savings and Loan Associations (VSLAs) and healthcare utilization. The results are presented primarily in tabular form to facilitate interpretation. An inferential statistical analysis was conducted to explore the relationships between VSLA participation variables and certain indicators related to community health insurance. Specifically, chi-square tests were used to assess the statistical significance of associations between categorical variables. In addition, binary logistic regression and odds ratios (ORs) with 95% confidence intervals (CIs) were calculated to estimate the strength and direction of associations between key variables, including participation in financial and solidarity mechanisms within VSLAs, health insurance coverage, and willingness to join a health insurance plan. A significance threshold of $p < 0.05$ was used to determine statistical significance.

➢ *Ethical Considerations*

Ethical approval for this study was obtained from the Ethics Committee of the University of the Great Lakes in Kisumu. Additional authorization to conduct the research in North Kivu province was granted by the National Health Ethics Committee (CNES), through the North Kivu Provincial Health Office. Participation in the study was voluntary, and all participants were informed of the research objective and procedures before the interviews. Oral informed consent was obtained from each participant before interview. Participants were assured that the information they provided would be treated with the strictest confidentiality and used exclusively for academic and research purposes. No personal identifiers were included in the dataset to guarantee anonymity and respect for the privacy of the participants.

III. RESULTS OF THE STUDY

The objective of this section is to present the results of the analysis of the association between solidarity mechanisms within Village Savings and Loan Associations (VSLAs) and insurance subscriptions by their members in Goma and its surrounding areas. These results consist, firstly, of a comparison between the control and intervention groups during the initial survey and, secondly, of a comparison of the initial and final results after awareness-raising sessions for VSLA members on the importance of integrating insurance to facilitate access to healthcare within their respective families.

➢ *Solidarity Engagement vs Health Insurance Coverage*

The baseline table seeks to establish a relationship between access to loan and contribution toward solidarity-based health insurance coverage among members of Village Savings and Loan Associations (VSLAs) in Goma.

➢ *Insurance Coverage by Contributions into Solidarity Basket*

At baseline, the analysis of contributions to the Solidarity Fund and their association with health insurance (HI) coverage revealed limited variations between the intervention and control groups.

Table 1. Coverage by Health Insurance (HI) Across Solidarity Fund Levels in Intervention and Control Groups (N = 210 Each)

Solidarity Fund (Fc)	Covered by HI – Yes	%	Covered by HI – No	%	Odds Ratio (OR)	95% CI
Intervention						
200 Fc	2	7.7%	24	92.3%	0.38	[0.08, 1.78]
500 Fc	12	8.6%	127	91.4%	0.43	[0.21, 0.89]
1000 Fc	9	20.0%	36	80.0%	1.25	[0.54, 2.89]
Total	23	11.0%	187	89.0%	—	—
Control						
200 Fc	0	0.0%	3	100.0%	0.00	[0.00, 3.49]
500 Fc	18	10.8%	149	89.2%	0.39	[0.21, 0.73]
1000 Fc	3	7.5%	37	92.5%	0.29	[0.08, 1.05]
Total	21	10.0%	189	90.0%	—	—

Note. $\chi^2(2) = 4.83$, $p = .09$ for the intervention group; $\chi^2(2) = 0.72$, $p = .696$ for the control group. Odds Ratios (OR) and 95% Confidence Intervals (CI) are calculated for each fund level comparing HI coverage (Yes vs. No).

In the intervention group, members contributing 200 Fc to the solidarity fund recorded a 7.7% HI coverage rate compared to 92.3% who were not covered, with an odds ratio (OR) of 0.38 and a wide confidence interval (95% CI [0.08, 1.78]), indicating a statistically non-significant association. For those contributing 500 Fc, the proportion covered by HI increased slightly to 8.6%, while 91.4% remained uncovered, with an OR of 0.43 (95% CI [0.21, 0.89]), suggesting a modest but meaningful positive relationship between higher contribution and likelihood of coverage. Among contributors of 1000 Fc, HI coverage reached 20.0%, compared to 80.0% who were not covered, with an OR of 1.25 (95% CI [0.54, 2.89]), indicating a relatively higher probability of being insured at this contribution level, though the wide confidence interval points

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

to statistical uncertainty. Overall, 11% of the intervention group were covered by HI, while 89% remained without coverage.

In the control group, participants contributing 200 Fc reported no HI coverage (0%), reflecting an absence of linkage between low solidarity fund participation and insurance membership. Those contributing 500 Fc showed 10.8% coverage versus 89.2% non-coverage, yielding an OR of 0.39 (95% CI [0.21, 0.73]), which similarly indicates that moderate contributions were associated with somewhat better HI participation. However, among contributors of 1000 Fc, only 7.5% were covered by HI, and 92.5% were not, with an OR of 0.29 (95% CI [0.08, 1.05]), again showing a weak and statistically inconclusive association.

- *Health Insurance by Benefitting from Solidarity*

The results presented in this baseline table examine the association between health insurance uptake and beneficiaries' participation in VSLA solidarity mechanisms within the study area, highlighting how engagement in solidarity-based financial support may relate to insurance coverage among members.

Table 2. Health Insurance Coverage by Beneficiary Status of Solidarity Funds at Baseline (N = 420)

Beneficiary of Solidarity Funds	**Intervention Group**			**Control Group**			**Diff. (%)**	**OR [95% CI]**
	Health Insurance Covered (*p* = .621)			**Health Insurance Covered (*p* = .081)**			**Overall (*p* = .099)**	
	Total (n)	**Yes (%)**	**No (%)**	**Total (n)**	**Yes (%)**	**No (%)**		
Yes	175	11.4	88.6	157	12.1	87.9	−0.7	1.07 [0.52, 2.23]
No	35	8.6	91.4	53	3.8	96.2	+4.8	0.41 [0.08, 2.12]
Total	210	11.0	89.0	210	10.0	90.0	+1.0	0.90 [0.48, 1.68]

Note.

Odds ratios (OR) and 95% confidence intervals (CI) were computed to compare the likelihood of being covered by health insurance among beneficiaries and non-beneficiaries of solidarity funds across intervention and control groups. Differences between groups were not statistically significant ($p > .05$).

At baseline, table above presents the distribution of health insurance coverage by beneficiaries of solidarity funds in both the intervention and control groups. In the intervention group, 11.4% of those benefiting from the solidarity fund were covered by health insurance, compared to 8.6% among non-beneficiaries. Similarly, in the control group, 12.1% of beneficiaries were covered versus only 3.8% among non-beneficiaries. Although coverage appeared slightly higher among solidarity fund beneficiaries, the overall differences were not statistically significant ($p = .099$).

The odds of being covered by health insurance were marginally higher among solidarity fund beneficiaries compared to non-beneficiaries in both the intervention group (OR = 1.07, 95% CI [0.52, 2.23]) and the control group (OR = 0.41, 95% CI [0.08, 2.12]). Overall, these findings suggest that, at baseline, solidarity fund participation did not exert a significant influence on health insurance coverage, indicating relative parity between groups before the intervention phase.

Table 3. Logistic Regression Predicting Insurance Coverage and Classification Accuracy

Panel A. Classification Table

	Predicted: Yes	**Predicted: No**	**% Correct**
Observed: Yes	11	14	44.0
Observed: No	6	204	97.1
Overall Percentage			91.5

Panel B. Logistic Regression Results

Variable	**B**	**SE**	**Wald**	**df**	**p**	**OR**	**Lower CI**	**Upper CI**
Duration in the group	-0.264	0.341	0.601	1	.438	0.768	0.394	1.497
Benefited from the fund (1)	0.311	0.916	0.115	1	.734	1.365	0.227	8.218

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

Mode of payment	-3.337	0.587	32.264	1	< .001	0.036	0.011	0.112
Constant	6.411	0.989	42.031	1	< .001	608.579		

Note. Cut value = .50. OR = Odds Ratio. CI = Confidence Interval.

The logistic regression model predicting insurance coverage demonstrated strong overall classification performance, correctly classifying 91.5% of cases. However, this accuracy was largely driven by the correct classification of uninsured individuals (97.1%), while the model showed limited sensitivity in identifying insured participants (44.0%).

Regarding the predictors, mode of payment emerged as the only statistically significant factor (B = -3.337, SE = 0.587, Wald = 32.264, p < .001). The odds ratio (OR = 0.036, 95% CI [0.011, 0.112]) indicates a substantial decrease in the likelihood of insurance coverage associated with certain payment modalities. In contrast, duration in the group (p = .438) and benefiting from the fund (p = .734) were not statistically significant predictors, suggesting that these factors do not independently influence insurance enrollment in the presence of other variables.

In global, the findings highlight the critical role of financial structuring mechanisms, particularly payment modalities, in shaping insurance uptake, while social participation variables alone appear insufficient to drive coverage.

- *Comparison of solidarity engagement to insurance coverage within each arm*

This table examines whether VSLA members' contributions to the solidarity fund are associated with changes in health insurance coverage between the baseline and endline periods, within a context where targeted sensitization sessions were conducted to promote the relevance of integrating health insurance into VSLA activities. In addition to capturing the direct financial role of solidarity fund contributions, the analysis situates these contributions within a broader behavioral and informational framework, where increased awareness and understanding of insurance mechanisms may influence enrollment decisions.

Table 4: Solidarity Contribution to Insurance Uptake Between Baseline and Endline within each Study Arm

Contribution to Social Fund (FC)	Endline Intervention**Health Insurance Coverage (p = .271)**	Baseline Intervention**Health Insurance Coverage (p = .247)**	**change**	Endline Control**Health Insurance Coverage (p = .434)**	Baseline Control**Health Insurance Coverage (p = .441)**	Change
200	28 (10.7%)	26 (7.7%)	+3.0%	1 (0.0%)	3 (0.0%)	0.0%
500	137 (10.9%)	139 (9.4%)	+1.6%	172 (9.3%)	167 (9.0%)	+0.3%
1,000	45 (20.0%)	45 (17.8%)	+2.2%	37 (16.2%)	40 (15.0%)	+1.2%
Total	**210 (12.9%)**	**210 (11.0%)**	**+1.9%**	**210 (10.5%)**	**210 (10.0%)**	**+0.5%**
Benefiting from Solidarity Funds	**Endline Intervention Health Insurance Coverage (p = .668)**	**Baseline Intervention Health Insurance Coverage (p = .921)**	**Change**	**Endline Control Health Insurance Coverage (p = .367)**	**Baseline Control Health Insurance Coverage (p = .711)**	**Change**
Yes	177 (12.4%)	175 (10.9%)	+1.6%	155 (11.6%)	157 (9.6%)	+2.1%
No	33 (15.2%)	35 (11.4%)	+3.7%	55 (7.3%)	53 (11.3%)	−4.0%
Total	**210 (12.9%)**	**210 (11.0%)**	**+1.9%**	**210 (10.5%)**	**210 (10.0%)**	**+0.5%**

Note. Diff. = Difference between baseline and endline percentages within each study arm. Values in parentheses indicate the proportion of VSLA members covered by health insurance. Percentages are rounded to one decimal place.

Health insurance coverage showed modest variation according to members' level of contribution to the VSLA social fund. In both the intervention and control groups, participants contributing higher amounts (FC 1,000) tended to display higher insurance enrollment than those contributing smaller amounts (FC 200). In the intervention group, coverage rose from 10.7% among members contributing FC 200 to 20.0% among those contributing FC 1,000, while the control group demonstrated a similar, though less pronounced, gradient. Despite this apparent positive pattern, none of these differences reached statistical significance (all p > .05), indicating that contribution size was not a strong or consistent determinant of insurance uptake. Between baseline and endline, overall insurance coverage increased only marginally. The intervention group registered a slight rise of 1.9 percentage points, compared to a more modest increase of 0.5 percentage points in the control group. However, these changes were not statistically significant (p > .05), suggesting that the intervention had a limited measurable effect on improving insurance enrollment over time.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

A similar pattern emerged when examining the role of benefiting from solidarity funds. Within the intervention arm, insurance coverage among beneficiaries increased slightly from 10.9% at baseline to 12.4% at endline. Non-beneficiaries also experienced a small improvement, with an increase of 3.7 percentage points. In the control group, changes were generally minimal and in some cases negative, with reductions of up to 4.0% observed among non-beneficiaries. Nevertheless, no statistically significant differences were found between beneficiaries and non-beneficiaries ($p > .05$), indicating that access to solidarity fund support was not strongly associated with higher health insurance enrollment.

Table 5. Comparative Logistic Regression Results and Classification Accuracy for Health Insurance Coverage (Baseline vs. Endline)

Panel A. Classification Accuracy

Observed	Baseline Predicted: No	Baseline Predicted: Yes	% Correct	Endline Predicted: Yes	Endline Predicted: No	% Correct
No	207	0	100.0	6	204	97.1
Yes	29	0	0.0	11	14	44.0
Overall %			87.7			91.5

Panel B. Logistic Regression Estimates

Variables	Baseline B (SE)	Baseline OR [95% CI]	p	Endline B (SE)	Endline OR [95% CI]	p
Duration in the group	-0.433 (0.488)	0.649 [0.249, 1.688]	.375	-0.264 (0.341)	0.768 [0.394, 1.497]	.438
Benefited from the fund (1)	-0.080 (0.657)	0.923 [0.255, 3.348]	.903	0.311 (0.916)	1.365 [0.227, 8.218]	.734
Mode of payment / Direct payment	-1.142 (0.571)	0.319 [0.104, 0.978]	.046	-3.337 (0.587)	0.036 [0.011, 0.112]	< .001
Constant	0.031 (1.215)	—	.979	6.411 (0.989)	—	< .001

Note.
Cut value = .50. OR = Odds Ratio. CI = Confidence Interval.
Baseline model includes: duration in group, benefit from fund, and direct financial payment.
Endline model includes: duration in group, benefit from fund, and mode of payment.

The comparative results reveal a notable improvement in overall model accuracy from baseline (87.7%) to endline (91.5%), suggesting enhanced predictive performance following the intervention and sensitization efforts. However, both models exhibit classification imbalance. At baseline, the model completely fails to identify insured individuals (0.0%), while at endline, sensitivity improves modestly (44.0%), indicating some progress in capturing insurance uptake dynamics.

Across both time points, mode of payment emerges as the most consistent and influential predictor. While it is already significant at baseline ($p = .046$), its effect becomes substantially stronger at endline ($p < .001$), with a dramatic reduction in odds (OR = 0.036). This suggests that, over time—and likely in conjunction with sensitization efforts—the way individuals finance healthcare becomes increasingly decisive in shaping insurance enrollment.

In contrast, duration in the group and benefiting from the solidarity fund remain non-significant in both periods, indicating that participation in VSLA structures alone is insufficient to drive insurance uptake. These findings suggest that while solidarity mechanisms provide a supportive financial environment, their effectiveness depends heavily on how they are operationalized—particularly in reducing reliance on direct out-of-pocket payments.

Overall, the results point to a reinforcing interaction between financial behavior (mode of payment) and awareness/sensitization interventions, highlighting that structural and informational factors must align to translate community-based solidarity into meaningful improvements in health.

IV. DISCUSSION OF THE RESULTS

The discussion of the results is structured in two complementary analytical stages. First, it compares health insurance coverage between the intervention and control groups at baseline, with particular attention to differences in levels of solidarity engagement prior to the implementation of sensitization and integration activities. This initial comparison establishes the pre-existing conditions and helps assess group comparability. Second, the discussion examines the relationship between solidarity fund engagement and health insurance coverage within each group over time, by comparing baseline and endline outcomes.

A. Solidarity Engagement vs Health Insurance Coverage

- *Health Insurance Coverage by Solidarity Contributions*

At baseline, the association between members' contributions to the solidarity fund and their enrollment in health insurance (HI) revealed only weak and inconsistent patterns across both the intervention and control groups.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

Although HI coverage appeared to increase marginally among members contributing higher amounts (notably at the 1000 Fc level in the intervention group), the observed differences were statistically insignificant. These results suggest that solidarity fund participation, while indicative of group engagement, did not yet translate into meaningful differences in insurance uptake.

This finding aligns with earlier evidence from the RDC, where financial participation in community groups does not automatically enhance health insurance enrollment unless supported by institutional trust, awareness, and service accessibility. For example (Ntabiruba^1 et al., 2025), in North Kivu found that although household savings behaviors and solidarity contributions foster mutual support, they do not necessarily lead to community-based health insurance (CBHI) participation without targeted sensitization and perceived quality of care. Similarly, (*Munyaneza, F., Bayingana, C., & Sayinzoga, F. (2021). Determinants of Community-Based Health Insurance Enrolment and Renewal in Rwanda. PLOS ONE, 16(3), E0247878*) in Rwanda showed that even where community solidarity systems exist, enrollment in CBHI depends more on perceived benefits, social trust, and the affordability of premiums than on financial capacity alone.

In the present study, the slight positive trend in HI coverage among higher contributors may reflect early signs of financial readiness or awareness of risk-pooling principles among some VSLA members. Comparable dynamics were reported by (Kebede et al., 2014). Previous research has shown that willingness to join community-based health insurance schemes is influenced by social capital, including trust, collective action, and participation in community networks such as savings groups (Donfouet & Mahieu, 2012); (Fenenga et al., 2018). However, the low and statistically uncertain associations observed here confirm that, prior to the intervention, solidarity funds functioned more as mutual aid instruments than as entry points into formal risk-sharing mechanisms such as CBHI.

In fact, these results highlight the structural and behavioral barriers limiting insurance uptake despite existing community solidarity frameworks. Strengthening the linkage between VSLA solidarity funds and insurance participation may therefore require explicit integration strategies, such as premium subsidies, trust-building measures, and health-literacy interventions, to translate financial participation into effective health protection.

- *Health Insurance by Benefitting of Solidarity Funds*

At baseline, the analysis revealed no statistically significant association between beneficiary status of solidarity funds and health insurance (HI) coverage in either the intervention or control groups. Although coverage appeared slightly higher among solidarity fund beneficiaries (11.4% vs. 8.6% in the intervention group; 12.1% vs. 3.8% in the control group), the overall differences were not significant (p = .099). The odds ratios further indicated weak associations (OR = 1.07 [0.52–2.23] in the intervention group; OR = 0.41 [0.08–2.12] in the control group), suggesting that, prior to the intervention, solidarity fund participation did not strongly predict insurance enrollment.

These results are consistent with findings from similar studies in the Great Lakes region and DRC, which emphasize that solidarity mechanisms often function primarily as short-term support systems rather than structured risk-sharing instruments. Ntabiruba^1 et al. (2025) observed earlier that this kind of mutual assistance rarely translates into formal insurance participation without targeted sensitization and affordability measures. Even empirical research shows that perceived quality of care, satisfaction with previous health services, and provider attitudes significantly affect trust in healthcare institutions and the sustainability of CBHI schemes (Akafu et al., 2023)**.** Similarly, analyses of community-based health insurance systems in Rwanda highlight that although the scheme relies on community participation, its success depends largely on institutional credibility, service quality, and perceived benefits, which shape people's willingness to enroll or renew membership (Chemouni, 2016); (Chemouni, 2018).

The weak link between solidarity fund participation and HI coverage in this study may therefore reflect structural and perceptual barriers, such as limited awareness of insurance mechanisms, inadequate integration between VSLAs and CBHI schemes, and, more often, financial constraints. Several scholars converge on the argument that community-based financial participation only becomes an effective pathway to health coverage when supported by enabling policies, health literacy, and institutional linkages, among them (Adebayo et al., 2015); (Eze et al., 2023) & (Worede et al., 2023).

To sum up, these baseline findings indicate that while solidarity funds play an important social protection role within VSLAs, their contribution to formal health insurance participation remains limited. Strengthening the functional integration between solidarity mechanisms and community-based health insurance could enhance financial resilience and facilitate broader health coverage in fragile contexts such as the eastern DRC.

B. *Contribution to Social Fund and Health Insurance Coverage at the Endline*

This eventual changes were measured after training and sensitization on the importance of insurance uptake for smoothing access to health by VSLAs' members in Goma.

- *Contribution in the Solidarity Basket vs Health Insurance Coverage*

The endline results reveal a positive but statistically insignificant association between the amount contributed to the social (solidarity) fund and health insurance coverage among VSLA members. In the intervention group, members contributing higher amounts (FC 1,000) exhibited greater

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

insurance coverage (20.0%) compared to those contributing smaller amounts (FC 200, 10.7%). This trend was similar, though less pronounced, in the control group. The consistency of this relationship, despite non-significant p-values ($p > .05$); suggests that higher financial engagement within solidarity structures may cultivate stronger forms of collective responsibility and predispose members to formalized risk-sharing mechanisms like micro-health insurance (MHI).

This observation aligns with recent findings emphasizing the social rootedness of financial protection behaviors in community-based organizations. For instance, (Obrist et al., 2022)**,** studying Tanzanian savings groups, found that regular contributions to social funds build "trust capital," which increases members' willingness to engage in broader social protection schemes. Similarly, (Oraro & Wyss, 2018) demonstrated in Kenya that community savings and credit groups foster a sense of security and mutual accountability that can later translate into voluntary insurance enrollment. This implies that solidarity-based financial behavior serves as a social preparatory phase for more formalized risk pooling.

➢ *Benefitting from Solidarity vs Insurance Coverage*

Furthermore, the data show that beneficiaries of solidarity funds reported marginally higher insurance coverage than non-beneficiaries (12.4% vs. 15.2% in the intervention group, respectively), though the differences were not statistically significant. This echoes findings from (Ly et al., 2022) in Senegal, which underline that receiving support from group welfare mechanisms reinforces perceptions of collective resilience but may not directly drive insurance uptake without structured integration of health financing education. In both studies, the impact of community solidarity funds on health insurance adoption was contingent upon awareness campaigns and institutional partnerships with local insurers.

The modest improvements observed between baseline and endline (+1.9% for intervention, +0.5% for control) mirror broader patterns across sub-Saharan Africa, where informal solidarity mechanisms continue to serve as vital but limited buffers against health shocks**.** For instance, (Salari et al., 2019), analyzing Ghanaian national data, observed that informal risk-sharing through social groups can complement health insurance participation, but cannot substitute for it without financial and administrative support. Likewise, (Bayked et al., 2023) in Ethiopia found that community contributions to mutual aid schemes enhance perceived benefits of collective protection, yet coverage expansion requires targeted subsidies or premium-matching from formal health insurance systems.

In fact, the results indicate that solidarity fund participation nurtures a culture of mutual trust and risk awareness**,** which is foundational for scaling micro-insurance schemes. However, the weak statistical associations underscore the limitations of self-financed solidarity systems in achieving significant health coverage outcomes. This confirms the argument advanced by (Woldemichael et al., 2019) and Eze et al. (2023) that to translate social solidarity into tangible insurance coverage, hybrid models are necessary; linking community-level contributions with institutional frameworks such as national health insurance or NGO-supported micro-premium models.

In fine, the findings affirm that while solidarity contributions within VSLAs symbolize a grassroots expression of financial protection and reciprocity, their influence on health insurance uptake remains incremental. Strengthening this linkage requires deliberate integration between informal savings systems and formal health financing mechanisms**,** coupled with tailored health literacy interventions to transform collective trust into sustained insurance participation.

V. CONCLUSION AND RECOMMENDATIONS

➢ *Conclusion*

This study set out to examine whether solidarity mechanisms within Village Savings and Loan Associations (VSLAs) can act as a catalyst for health insurance uptake in a crisis-prone setting such as Goma and its surroundings in eastern DRC. The findings provide a nuanced understanding of the relationship between community-based financial solidarity and formal health insurance enrollment.

In general, the results demonstrate that while solidarity mechanisms, such as contributions to social funds and access to mutual financial support, play a meaningful role in strengthening financial resilience and fostering collective responsibility, their direct effect on health insurance uptake remains limited. At baseline, no statistically significant association was found between solidarity engagement and insurance coverage, indicating that participation in VSLA solidarity structures alone does not automatically translate into enrollment in health insurance schemes.

Following sensitization and awareness interventions, modest improvements in insurance coverage were observed, particularly within the intervention group. However, these changes were not statistically significant, suggesting that short-term awareness campaigns are insufficient to generate substantial behavioral shifts. Importantly, the analysis consistently identified mode of payment as the most significant predictor of insurance uptake, highlighting the central role of financial structuring and affordability over purely social or participatory factors.

Basically, solidarity mechanisms function more effectively as informal safety nets than as direct gateways to formal insurance systems. Their true potential lies in creating a foundation of trust, financial discipline, and risk-sharing awareness, which, if properly leveraged, can facilitate the transition toward structured health financing mechanisms. However, without deliberate institutional integration, enabling policies, and improved health system trust, this potential remains underutilized.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

➢ *Recommendations*

Strengthen integration between VSLAs and community health insurance schemes: In fact, there is a need to move beyond parallel functioning toward functional integration. Policymakers and practitioners should:

- Link VSLA solidarity funds with community-based or national health insurance schemes;
- Introduce group-based insurance enrollment models within VSLAs;
- Pilot automatic premium contributions deducted from savings cycles.

Improve affordability through financial innovations: So, given the strong influence of payment modalities:

- Introduce flexible and staggered premium payment options aligned with VSLA cycles.
- Promote micro-premium models adapted to irregular incomes in the informal sector.
- Provide targeted subsidies or premium-matching mechanisms for vulnerable households.

Enhance health insurance literacy and awareness interventions because this should be:

- Continuous rather than one-off campaigns;
- Integrated into regular VSLA meetings;
- Focused on benefits, trust-building, and practical enrollment processes, not just general information.

Build trust in health systems knowing that low insurance uptake is partly driven by perceptions of poor service quality:

- Improve quality of care and responsiveness in affiliated health facilities.
- Strengthen accountability mechanisms between insurers and service providers.
- Promote community feedback systems within VSLAs.

Promote institutional partnerships:

- Encourage collaboration between Government, NGOs, micro-insurers, and VSLA networks.
- Develop hybrid financing models combining community solidarity with formal insurance structures.
- Leverage VSLAs as entry platforms for Universal Health Coverage (UHC) strategies.

Scale up long-Term Interventions because short-term interventions showed limited impact:

- Implement longitudinal programs combining financial, educational, and institutional components.
- Monitor behavioral changes over extended periods to capture real impact.

➢ *Limitations of the Study*

Despite its contributions, this study presents several limitations that should be considered when interpreting the findings:

Context-specific findings: The study was conducted in a conflict-affected setting (eastern DRC), where instability may influence both financial behavior and healthcare access. This limits the generalizability of findings to more stable contexts.

➢ Quasi-Experimental design constraints: Although the study included intervention and control groups, the absence of full randomization may introduce selection bias and limit causal inference.

➢ Short follow-up period: The time between baseline and endline (approximately three months of intervention) may have been insufficient to observe significant behavioral changes in insurance enrollment, which typically requires longer adaptation periods.

➢ Limited scope of variables: The study focused primarily on financial and participation variables. Other important determinants, such as perceived quality of care, cultural beliefs, and trust in institutions, were not deeply explored.

➢ Self-Reported Data: Data were collected through structured interviews due to deficit of organized internal records, which may introduce **r**ecall bias: Social desirability bias, especially regarding financial contributions and insurance status.

Low baseline insurance coverage that is characteristic of the LMICs, in general, and DRC in particular: The very low level of insurance coverage reduces statistical power and may partly explain the lack of significant associations.

The study underlines a critical insight: solidarity is necessary but not sufficient for expanding health insurance coverage. Transforming community-based financial cooperation into effective health protection requires a deliberate alignment of financial design, institutional trust, and policy support**.** In fragile settings like eastern DRC, this alignment cannot be perceived only as a technical necessity but also as a strategic pathway toward achieving equitable and sustainable health coverage.

REFERENCES

[1]. Abdulai, I. A., Adams, A.-M., Abdulai, M., & Bukari, S. (2022). Contributions of village savings and loans associations to rural livelihoods' development in the Upper West Region, Ghana. SN Social Sciences, 2(5), 73. https://doi.org/10.1007/s43545-022-00377-w

[2]. Adebayo, E. F., Uthman, O. A., Wiysonge, C. S., Stern, E. A., Lamont, K. T., & Ataguba, J. E. (2015). A systematic review of factors that affect uptake of community-based health insurance in low-income and middle-income countries. BMC Health Services Research, 15(1), 543. https://doi.org/10.1186/s12913-015-1179-3

[3]. Adeniran, A., Ojo, O. Y., Chieme, F. C., Shogbamimu, Y., Olowofeso, H. O., Sidibé, I., Fisher, O., & Adeleke, M.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

(2023). Investigating catastrophic health expenditure among people living with HIV and AIDS in South Western Nigeria. Health Care Science, 2(6), 370–380. https://doi.org/10.1002/hcs2.77

[4]. Akafu, W., Daba, T., Tesfaye, E., Teshome, F., & Akafu, T. (2023). Determinants of trust in healthcare facilities among community-based health insurance members in the Manna district of Ethiopia. BMC Public Health, 23(1), 171. https://doi.org/10.1186/s12889-023-15124-w

[5]. Bayked, E. M., Toleha, H. N., Kebede, S. Z., Workneh, B. D., & Kahissay, M. H. (2023). The impact of community-based health insurance on universal health coverage in Ethiopia: A systematic review and meta-analysis. Global Health Action, 16(1), 2189764. https://doi.org/10.1080/16549716.2023.2189764

[6]. Chemouni, B. (2016). The political path to universal health coverage: Elite commitment to community-based health insurance in Rwanda. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2893122

[7]. Chemouni, B. (2018). The political path to universal health coverage: Power, ideas and community-based health insurance in Rwanda. World Development, 106, 87–98.

[8]. Chipman, A., Koehring, M., Boshnakova, A., Guerrero, C., Hurst, L., & Pannela, A. (2017). Global access to healthcare: Building sustainable health systems. Economist Impact.

[9]. Deville, C., Fecher-Bourgeois, F., & Poncelet, M. (2018, July 11). Les mutuelles de santé subventionnées comme instruments de la Couverture Maladie Universelle au Sénégal. 5e Rencontres des Etudes Africaines en France (REAF). https://orbi.uliege.be/handle/2268/226717

[10]. Donfouet, H. P. P., & Mahieu, P.-A. (2012). Community-based health insurance and social capital: A review. Health Economics Review, 2(1), 5. https://doi.org/10.1186/2191-1991-2-5

[11]. Eze, P., Ilechukwu, S., & Lawani, L. O. (2023). Impact of community-based health insurance in low- and middle-income countries: A systematic review and meta-analysis. PloS One, 18(6), e0287600. https://doi.org/10.1371/journal.pone.0287600

[12]. Fadlallah, R., El-Jardali, F., Hemadi, N., Morsi, R. Z., Abou Samra, C. A., Ahmad, A., Arif, K., Hishi, L., Honein-AbouHaidar, G., & Akl, E. A. (2018). Barriers and facilitators to implementation, uptake and sustainability of community-based health insurance schemes in low- and middle-income countries: A systematic review. International Journal for Equity in Health, 17(1), 13. https://doi.org/10.1186/s12939-018-0721-4

[13]. Fenenga, C. J., Buzasi, K., Arhinful, D. K., Duku, S. K. O., Ogink, A., & Poortinga, W. (2018). Health insurance and social capital in Ghana: A cluster randomised controlled trial. Global Health Research and Policy, 3(1), 35. https://doi.org/10.1186/s41256-018-0090-y

[14]. Habumuremyi, P. D., Habamenshi, V., & Mvunabo, G. (2019). Village savings and loan associations and social economic development of poor households in Rwanda. A case of Murundi sector (2015–2019). International Journal of Research in Economics and Social Sciences (IJRESS), 9(10). https://www.academia.edu/download/63774624/5ijrss-7523-VLSA_A5-ijrss-oct19ND_SOCIO_ECONOMIC_DEVELOPMENT_OF_POOR_HOUSEHOLDS_IN_RWANDA20200629-66934-v0zfov.pdf

[15]. Issa, M. (2023). The Pathway to Achieving Universal Health Coverage in the Democratic Republic of Congo: Obstacles and Prospects. Cureus, 15(7). https://www.cureus.com/articles/156468-the-pathway-to-achieving-universal-health-coverage-in-the-democratic-republic-of-congo-obstacles-and-prospects.pdf

[16]. Kasahun, G. G., Gebretekle, G. B., Hailemichael, Y., Woldemariam, A. A., & Fenta, T. G. (2020). Catastrophic healthcare expenditure and coping strategies among patients attending cancer treatment services in Addis Ababa, Ethiopia. BMC Public Health, 20(1), 984. https://doi.org/10.1186/s12889-020-09137-y

[17]. Kebede, A., Gebreslassie, M., & Yitayal, M. (2014). Willingness to pay for community based health insurance among households in the rural community of Fogera District, North West Ethiopia. International Journal of Economics, Finance and Management Sciences, 2(4), 263–269.

[18]. Ly, M. S., Faye, A., & Ba, M. F. (2022). Impact of community-based health insurance on healthcare utilisation and out-of-pocket expenditures for the poor in Senegal. BMJ Open, 12(12), e063035. https://doi.org/10.1136/bmjopen-2022-063035

[19]. Mulaga, A. N., Kamndaya, M. S., & Masangwi, S. J. (2021). Examining the incidence of catastrophic health expenditures and its determinants using multilevel logistic regression in Malawi. Plos One, 16(3), e0248752.

[20]. Munyaneza, F., Bayingana, C., & Sayinzoga, F. (2021). Determinants of community-based health insurance enrolment and renewal in Rwanda. PLOS ONE, 16(3), e0247878. - Recherche Google. (n.d.). Retrieved November 3, 2025, from https://www.google.com/search?q=Munyaneza%2C+F.%2C+Bayingana%2C+C.%2C+%26+Sayinzoga%2C+F.+(2021).+Determinants+of+community-based+health+insurance+enrolment+and+renewal+in+Rwanda.+PLOS+ONE%2C+16(3)%2C+e0247878.&oq=Munyaneza%2C+F.%2C+Bayingana%2C+C.%2C+%26+Sayinzoga%2C+F.+(2021).+Determinants+of+community-based+health+insurance+enrolment+and+renewal+in+Rwanda.+PLOS+ONE%2C+16(3)%2C+e0247878.&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIGCAEQRRg80gEJMjAyMGowajE1qAIAsAIA&sourceid=chrome&ie=UTF-8

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26mar1529

[21]. Ntabiruba^1, J. M., Ruriho, C. K., Kibendelwa, Z. T., Théophile4, A. K., Baelani5, J. I., Birikunjira6, W. B., Mumbere7, Z. M., Nsengiyumva8, L. B., Ntabiruba, A. M., & Okitosho, S. W. (2025). Determinants of Household Participation in Healthcare Prepayment Schemes in the City of Goma, in the Eastern Democratic Republic of the Congo: A Cross-Sectional Study. https://www.researchsquare.com/article/rs-8147855/latest

[22]. Obrist, B., Dillip, A., Kalolo, A., Mayumana, I. M., Rutishauser, M., & Simon, V. T. (2022). Savings groups for social health protection: A social resilience study in Rural Tanzania. Diseases, 10(3), 63.

[23]. Oraro, T., & Wyss, K. (2018). How does membership in local savings groups influence the determinants of national health insurance demand? A cross-sectional study in Kisumu, Kenya. International Journal for Equity in Health, 17(1), 170. https://doi.org/10.1186/s12939-018-0889-7

[24]. Salari, P., Akweongo, P., Aikins, M., & Tediosi, F. (2019). Determinants of health insurance enrolment in Ghana: Evidence from three national household surveys. Health Policy and Planning, 34(8), 582–594.

[25]. Samsudin, A., & Prabowo, H. (2022). Community-based health coverage at the crossroad: The Muhammadiyah health fund in Indonesia. Indonesian Journal of Islam and Muslim Societies, 12(1), 111–138.

[26]. Woldemichael, A., Gurara, D., & Shimeles, A. (2019). The impact of community based health insurance schemes on out-of-pocket healthcare spending: Evidence from Rwanda. International Monetary Fund. https://books.google.fr/books?hl=fr&lr=&id=aqQZEAAAQBAJ&oi=fnd&pg=PA4&dq=The+impact+of+community+based+health+insurance+schemes+on+out-of-pocket+healthcare+spending:+evidence+from+Rwanda&ots=W4YFWDRJwA&sig=ppJnMOUIHVE3E-0wvv1PZ7EIJ6E

[27]. Worede, D. T., Tariku, M. K., Asresie, M. B., & Shibesh, B. F. (2023). Household satisfaction and associated factors with community-based health insurance scheme in Ethiopia: Systematic review and meta-analysis. Global Health Research and Policy, 8(1), 41. https://doi.org/10.1186/s41256-023-00325-y