Evaluation of the Impact of the Program on Social and Economic Rights (POSER) Agricultural Income Generating Activities in Rwanda

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Abstract

The study evaluated the impact of the POSER agricultural income–generating activities to beneficiaries living in Butaro and Bungwe sectors in Rwanda. A cross-sectional study was conducted to assess the change in household income, subdivided into 5 socio-economic indicators: ability to pay for food, shelter, school fees, health insurance, and change in Ubudehe (socio-economic status categorization in Rwanda). The change in percentage of beneficiaries living in poverty and their satisfaction were also collected. A total of 235 participants completed the phone survey. Household incomes significantly improved from RWF 7,901.42 before to RWF 11,422.27 after joining the POSER program (P<0.001). Significant improvements were seen in four of the five socioeconomic indicators: the ability to afford food (P<0.001), shelter (P<0.001), health insurance (P<0.001), and children's school fees (P<0.001). A significant percentage of beneficiaries moved from living below to above the poverty level (P<0.001). The majority of beneficiaries (91.5%) were satisfied with the program. Further research on factors that could have influenced the change in the socioeconomic status of the participants and their level of satisfaction is needed.

Keywords: Social determinants; Socio-economic status; Agriculture; Income-generating activities

Introduction

Significant efforts have been made to eradicate extreme poverty and hunger globally. However, the progress in eradicating poverty as indicated by Sustainable Development Goal 1 of the 2030 United Nations Agenda in low- and middle-income countries (LMICs) has been slow [1]. The number of people living in poverty increased from 785.4 million in 2015 to 821.6 million in 2018 [2]. Globally, about 1.3 billion people lived under the poverty line, where 42% of them resided in Sub-Saharan Africa in 2018 [3]. More than 30% of the population in East Africa lived in extreme poverty. Out of the 12 million people in Rwanda, 63% lived in abject poverty in 2016 [4].

After overcoming the economic and social destruction of the 1994 Genocide against the Tutsi, Rwanda developed an Economic Development and Poverty Reduction Strategy 1 (EDPRS1). The strategy developed in 2008 aimed at reducing poverty, food insecurity, and improving land management and environment protection through social protection, environment, and natural resource management [5]. In 2013, EDPRS 2 was developed to stimulate progress towards Rwanda's middle-income status for improved quality of life through maintained GDP growth of

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11.5%. As a result, poverty was reduced to less than 30% in 2018. The same year, Partners In Health (PIH), an international Non-Governmental Organization (NGO) working in Rwanda, started its Program on Social and Economic Rights (POSER) that targeted the most vulnerable populations in the rural areas of three districts of Rwanda with the aims to address socio-economic development challenges. POSER provided six interventions: 1) education support, 2) health insurance payment, 3) housing support, 4) food support, 5) transport support, and 6) income-generating activities [6]. Income-generating activities (IGA) were available to all beneficiaries.

In Burera District, Northern Rwanda, 802 poor households from two sectors, Butaro and Bungwe, were enrolled in the POSER program with 601 accessing income generating activities including agricultural farming cooperatives, livestock distribution, farming input, and vocational training between 2013 and 2018. However, no study on the impact of the program was conducted. Accordingly, this study aimed to assess the impact of POSER's agricultural income generating activities on its beneficiaries, specifically on their income, percentage in poverty, socio-economic status, and satisfaction.

Literature Review

Setting

This study was conducted in Butaro and Bungwe sectors, located in Burera District, Northern province of Rwanda (National Institute of Statistics of Rwanda [7]. Fifty-one percent of the 336,582 people in Burera lived below the poverty line (National Institute of Statistics of Rwanda (NISR), 78% had access to health insurance, 25.6% lived in clustered rural housing and 27% experienced food insecurity [8,9]. The illiteracy level was 35% [8].

Design

A cross sectional survey was administered between May and July 2020 to determine the socioeconomic impact of the POSER agricultural income generating activities to the beneficiaries and their level of satisfaction.

Sample and sample size

Samples were randomly selected from the 601 active POSER participants accessing agricultural income-generating activities enrolled between 2014 and 2017.

Measures

The main measures for this study were change in household income and change in percentage of beneficiaries living in poverty. Five socio-economic indicators were measured to detect changes in these areas, including the percentage of people who could afford to pay for 1) food, 2) shelter, 3) health insurance, 4) children's school fees; and 5) percentage change in Ubudehe categories before and after participating in the POSER program. The percentage of beneficiaries who were satisfied with the program was also collected.

Data collection tools

A survey was used in data collection. It was developed based on a similar previous study [10]. The tool had three parts. Part

one contained some basic demographic information. Part two had twelve questions about socio-economic information. Eight yes and no questions included the ability to pay for food, health insurance, shelter, and children school fees before and after joining the POSER program. Four questions asked their monthly income and Ubudehe category before and after joining the POSER program. Part three had one question about the level of satisfaction of the participants in the program. The tool was developed in English and translated to Kinyarwanda (the local language) and was pre-tested with seven people including people involved in the POSER program. Then the tool was also modified based on feedback before administration.

Data collection

The POSER program staff made first contact with beneficiaries to describe the research study and gauge their interest. The researchers in turn contacted those who agreed to participate via phone. Verbal informed consent was acquired after the study was described to the participants. The data collectors read the questions in Kinyarwanda to the participants and recorded the responses directly in an online google form. The survey took about 15-20 minutes to complete. The data collectors received one-week of training on the study objectives, ethical considerations, and the survey tools. The study was approved by the IRB of the University of Global Health Equity.

Data management and analysis

Descriptive statistics were used to summarize demographic information and satisfaction rate. McNemar tests were used to test for paired nominal measures including the change in percentage of the participants' ability to pay for food, shelter, health insurance, and school fees as well as the percentage living in poverty before and after enrolled in the POSER program. A Wilcoxon Signed Rank test was conducted to analyze the change in income and Ubudehe before and after the enrollment. Fisher exact tests were used to detect the associations between satisfaction and the other key measures. All statistical analyses were performed by using SPSS, v.26, with a p-value set at 0.05 (95% confidence level).

Results

Out of the 601 beneficiaries of the POSER program, 235 (39%) were reached and consented to participate in the study, with 121 (51.5%) from the Butaro sector, and 114 (48.5%) from Bungwe, 141 (60%) were females, 168 (71.5%) were above the age of 40 years with the mean age of 47.7 years (SD=12.3), 169 (71.9%) were married/cohabited, 138 (58.7%) had completed primary education. The 2014 cohort had the highest number of participants (n=109, 46.6%). The majority were the head of the households (n=177, 75.3%), owning land (n=168, 73.7%), the primary providers in their households (n=179, 76.2%), had between 1-5 dependents (n=179, 76.2%, mean= 3.9, SD=2.02). Only 50 (21.6%) participants had alternative sources of income **(Table 1)**.

The mean income significantly increased from RWF 7,901.42 before the POSER program to RWF 11,422.27 after joining the POSER program (P<0.001). There was a significant reduction of

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percentage of beneficiaries living in poverty, with 11% moved from income below the poverty line from before joining POSER to above the poverty line after joining POSER (P<0.001).

Four of the five socio-economic indicators showed significant changes from before to after joining the POSER program, with 40% beneficiaries moved from not being able to buy food from before joining POSER to become able after joining POSER (P<0.001); 28% improved from not able to pay for their shelter to able (P<0.001); 46% changed from not able to afford health insurance to able to afford (P<0.001); and 43% changed from could not pay for their children's school fees to able to (P<0.001). There was no significant change in Ubudehe category from before to after joining the POSER program (P=0.178). Of the 235 survey participants, 215 (91.5%) reported being satisfied with the POSER program **(Table 2)**.

Among the socio-economic indicators, the ability to afford health insurance and school fees had the highest percentage of improvement (46% and 43.4% respectively) while the two indicators with the least improvements were change in Ubudehe (24.9%, statistically not significant) and the ability to afford shelter (27.7%). While a small percentage of beneficiaries ranged from 2.6% (afford school fee) to 16.7% (Ubudehe), reported they had deteriorated **(Table 3)**.

There were 44 (18.7%) beneficiaries reported they had improvement in none of the five socio-economic indicators. The majority reported they had improvement in one (n=61, 26%) or two indicators (n=63, 26.8%). Only 6 (2.6%) reported they had improvement in all 5 indicators **(Table 4)**. No statistical significant association was found with change in any of the key indicators **(Table 5)**.

Varibales	Categories	N(%)
Sample		235
Location	Bungwe	114(48.5%)
	Butaro	121(51.5%)
Sex	Male	94(40%)
	Female	141(60%)
Age	Mean (SD)	47.7(12.3)
	<40	61(26%)
	40 or above	174(74%)
Marital status	Single	13(5.5%)
	Married/cohabited	169(71.9%)
	Divorced/ widowed	53(22.6%)
Education	None	80(34%)
	Primary school	138(58.7%)
	Secondary School	17(7.2%)
Head of household	No	58(24.7%)
	Yes	177(75.3%)
Year of enrollment	2014	109(46.6%)
	2015	31(13.2%)
	2016	48(20.5%)
	2017	46(19.7%)
Land ownership	Own land	168(73.7%)
	not own land	60(26.3%)
Primary provider	Myself	179(76.2%)
	My spouse	46(19.6%)
	Other Family members	10(4.3%)
Other sources of income	No	182(78.4%)
	Yes	50(21.6%)
No. of dependents	Mean (SD)	3.9(2.02)
	1–5	179(76.2%)
	Above 5	56(23.8%)

Table 1: Table summarizing demographic information of the participants.

Indicator		Mean before	Mean after		P-value
Income (RWF)		7901.42	11422.27		<0.001*
Indicator	Category	Could not afford after	Could afford after		P-value
Food	Could not afford before	28 (12%)	95 (40%)		<0.001*
	Could afford before	8 (3%)	104 (44%)		
Shelter	Could not afford before	15 (6%)	65 (28%)		<0.001*
	Could afford before	9 (4%)	146 (62%)		
Health insurance	Could not afford before	25 (11%)	108 (46%)		<0.001*
	Could afford before	18 (8%)	84 (36%)		
School fees	Could not afford before	88 (39%)	98 (43%)		<0.001*
	Could afford before	6 (3%)	34 (15%)		
Indicator		in poverty after	Not in poverty after		P-value
Poverty	In poverty before	140 (66%)	24 (11%)		<0.001*
	Not in poverty before	3 (1%)	45 (21%)		
		Category 1 after	Category 2 after	Category 3 after	
Ubudehe	Category 1 before	41 (18%)	42 (18%)	3 (1%)	0.178
	Category 2 before	26 (11%)	60 (26%)	13 (6%)	
	Category 3 before	6 (3%)	7 (3%)	35 (15%)	
Satisfaction	Satisfied	215 (91.5%)			
	Not satisfied	20 (8.5%)			

Note: *Significant at P=0.05

Table 2: Table summarizing the key measures.

Indicator	Improved	No change	Deteriorated
Afford food	95 (40%)	132 (56%)	8 (3%)
Afford health insurance	108 (46%)	109 (46%)	18 (7.7%)
Afford shelter	65 (27.7%)	161 (68.5%)	9 (3.8%)
Afford school fee	98 (43.4%)	122 (51.9%)	6 (2.6%)
Ubudehe	58 (24.9%)	136 (58.4%)	39 (16.7%)

Table 3: Table summarizing the percentages of beneficiaries with change in socio-economic indicators.

No. of socio-economic indicators changed	Improved
0	44(18.7%)
1	61(26%)
2	63(26.8%)
3	37(15.7%)
4	24(10.2%)
5	6(2.6%)

Table 4: Percentage of beneficiaries with the number of socio-economic indicators improved, no change and deteriorate.

		Satisfied N (%)	Not satisfied N(%)	P-value
Income	Improved	150(77.7%)	11(61.1%)	0.1
	No change	22(11.4%)	5(27.8%)	
	Worse	21(10.9%)	2(11.1%)	
Food	Improved	86(40.0%)	9(45.0%)	0.91
	No change	121(56.3%)	11(55.0%)	
	Worse	8(3.7%)	0(0.0%)	
Shelter	Improved	56(26.0%)	9(45.0%)	0.185
	No change	150(69.8%)	11(55.0%)	
	Worse	9(4.2%)	0(0.0%)	
Health insurance	Improved	96(44.7%)	12(60.0%)	0.316
	No change	101(47.0%)	8(40.0%)	
	Worse	18(8.4%)	0(0.0%)	
School fees	Improved	85(41.1%)	13(68.4%)	0.077
	no change	116(56.0%)	6(31.6%)	
	worse	6(2.9%)	0(0.0%)	
Poverty	improved	24(12.3%)	0(0%)	0.401

Table 5: Association between satisfaction and key measures.

Discussion

Our findings indicated the beneficiaries of the POSER IGA program had significant improvements in their household incomes. Such increased income translated to improved ability to afford food, shelter, school fees, and health insurance. And more importantly, significantly reduced the percentage of households living in poverty. Similar results were shown in other income-generating programs in other countries, including South Africa, Bangladesh and Pakistan; although direct comparison is not possible as different IGA programs provided different activities and had different objectives [11,12]. The IGA from these programs included creating employment opportunities, microfinancing, providing housing and food support-all operated within each country's own regulations, practices, political and economic environment. Each of these programs provided some unique and customized interventions to help their beneficiaries to achieve a more sustainable financial security.

Two areas the beneficiaries showed the most improvement were the ability to afford health insurance (46%) and pay for children's school (42%). In Rwanda, citizens need to pay a premium in order to join the national universal health insurance. Despite the premium amount being small, many still could not afford to pay. With the increase in income, more families could pay the health insurance premium and be able to access healthcare. Such improvement is impactful as this would potentially prevent many families from falling into catastrophic expenditures due to their healthcare needs, and being trapped in the vicious cycle of poverty.

The government of Rwanda has also implemented the Twelve Years Basic Education Program to provide access to free education for all Rwandans [13]. However, while school tuition is free, other additional costs such as lunch, uniforms, school supplies and administrative costs can pose challenges to impoverished families. Other studies from countries with similar settings had also shown children from poor families had lower school enrolment and higher dropout rate [14]. Such positive improvement bears long term impacts as many studies have shown children with proper education have significantly more future job opportunities [15]. Our evaluation showed the beneficiaries of the POSER program had improvement in income and the socio-economic indicators, however evaluating the longer-term impact due to these improvements is needed.

Two areas the beneficiaries showed the least improvement were the ability to afford shelter (27.7%) and change in Ubudehe category (24.9%, with no statistical significant change). Housing generally is the heavier portion of day to day living expenses compared to the other indicators, such as food or health insurance [16]. With expenses on housing being the biggest allocation in a family's budget, a larger income change would be required to show significant improvement in this area. Not surprisingly, our results showed a smaller percentage of beneficiaries reported improvement in this area.

The results showed there was no significant change in Ubudehe categories among the beneficiaries. The economic classification (Ubudehe) of Rwandan citizens has been an issue of debate for some time. In 2015, the Government of Rwanda reported that 83.6% of people were dissatisfied with their Ubudehe category because they were wrongly classified compared to their socioeconomic status [17]. Previous research in this area has pointed out the lack of clear definitions of the categories as well as criteria and mechanism to move between categories [17]. This external factor could have affected the result of this particular indicator. Advocacy for the government to improve the categorization system is needed.

Our results showed the majority of participants were satisfied with the POSER program. Although we could not detect any association of this satisfaction to any of the key measures. It appeared that the POSER program was overwhelmingly welcomed by the beneficiaries. Even some respondents who reported doing worse in food, shelter, health insurance, school fees, poverty level, and overall income, they still reported they were satisfied with the program. Further study is needed to investigate the rationale and factors affecting such satisfaction.

This study showed the positive impact of the POSER IGA program on the various parts of their beneficiaries' lives. However, the results also showed some discrepancies. Our results showed the beneficiaries had a significant increase in their mean monthly income from RWF 7 901.42 to RWF 11 422.42 and the percentage of the beneficiaries in poverty was reduced by 8%, considering the poverty line being RWF 13 281.25 (National Institute of Statistics of Rwanda [18]. Although the improvement was statistically significant, the magnitude in the income change was small RWF 3 521 (about 4 USD). It is questionable that such a small increase in income could allow the beneficiaries to improve in multiple socio-economic indicators. Further analysis showed 24 respondents reported their incomes were less than before, but 18 of them reported improvements in up to 3 socio-economic indicators. Similarly, 34 respondents reported there was no change in their incomes, but 24 of them reported improvements in up to 4 socio-economic indicators. Apart from providing IGA, the POSER program also provides education support, health insurance payment, housing support, food support, and transport support. It is possible that the respondents were benefiting from these other POSER interventions, thus improved in food, insurance, school and shelter without necessarily increasing their income. Since our study did not include a control group, i.e. those who did not participate in any POSER IGA program, we could not control for confounding. Future studies should be conducted to control for these confounding variables. Moreover, we could not verify the accuracy of the data as the information collected via the survey was self-reported. The possibility of data error could not be eliminated [19,20].

Conclusion

Despite the limitations, this study was the first to assess the PIH's POSER agricultural IGA program in Rwanda. The results showed a positive impact on the beneficiaries in general. The results can provide PIH an entry point to improve or adjust the IGA program. Advocacy for reviewing the Ubudehe categorization that can correctly reflect the socioeconomic status of the population is also necessary.

Funding

Conflicts of Interest

The authors have no relevant financial or non-financial interests to disclose. All authors declare no conflict of interest.

Ethics Approval

This study was approved by the IRB at UGHE.

Consent Participate (Include Appropriate Consent Statements)

All participants provided informed consents.

Consent for Publication

All authors consented to publish.

Author's Contributions

Conceptualization: All authors; methodology: Saddam Bukuru, Annick Gloria Uwitonze, Lamek Mageto Nyabuga, Albert Ndayisaba; formal analysis: Saddam Bukuru, Annick Gloria Uwitonze, Lamek Mageto Nyabuga, Rex Wong; investigation: Saddam Bukuru, Annick Gloria Uwitonze, Lamek Mageto Nyabuga; data collection: Saddam Bukuru, Annick Gloria Uwitonze, Lamek Mageto Nyabuga, Albert Ndayisaba; writing–original draft preparation: Saddam Bukuru, Annick Gloria Uwitonze, Lamek Mageto Nyabuga; writing–review and editing, Saddam Bukuru, Annick Gloria Uwitonze, Albert Ndayisaba, Rex Wong; supervision, Zahirah McNatt, Rex Wong.

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