Closing the Poor-rich Gap in Contraceptive Use: Evidence from Rwanda

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Abstract

Rwanda has made impressive increase in population growth control during the last decade. The Contraceptive Prevalence Rate (CPR) rose threefold from 17% in 2005 to 52% in 2010 and 53% in 2014. Contraceptive uptake was recorded more among poor populations than among rich and among rural than among urban residents. As result, the poor-rich gap in family planning evolved in convergence. This paper investigates the pathways through which the narrowing contraceptive gap is occurring. More specifically, the research examines the extent to which the differences in trends are associated with the differences in demand for children and/or the differences in family planning services in terms of types of contraceptive methods used and sources of supply. Understanding these mechanisms is essential for both family planning providers and policy makers in Rwanda to evaluate the ongoing program and take the best way towards a sustainable population growth control. It is also useful for other countries to improve their family planning programs. The study uses a polled dataset from the 2005, 2010, and 2014 DHS datasets. Descriptive statistics and Multivariate analysis are used to describe the trends and assess the change of overtime.

Results indicate that the convergence in contraceptive use is associated with higher decline in desired fertility and higher uptake of long acting methods among the poor. The Community Health Worker service would have played an important role in the uptake among the poor population. The study suggests that the increase in contraceptive use among poor requires specific strategies in accordance to the local culture, a strategy that will respond to their requests and aspirations.

Key words: Contraceptives, poor-rich gap, family planning

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1. Introduction

Family planning (FP) is recognized as one of the most influential development interventions with benefits on maternal and child health, and on economic development at individual and national levels (Cleland et ali. 2006, Ringheim Karin et ali. 2011). The World Sustainable Development Goals have recognized its contribution in the management of environmental challenges (PATH 2015, Starbird et ali. 2016, Speidel et ali. 2007). However, in developing countries, especially in sub-Sahara Africa, despite the undeniable progress made during the last decades, contraceptive use is still low, 28,4% in 2015, (UN, 2015). The levels of progress however vary across and within regions and countries. In 2015, the Contraceptive Prevalence Rate (CPR) varied between 63.9% in Southern Africa region and only 16.7% in Western Africa. Much higher are the disparities within countries which may reflect inequity, and as thus become an issue of development that needs therefore intervention. Within countries, most inequalities exist between rural and urban areas or between socioeconomic categories.

Theoretically, inequity exists when people are unfairly deprived of something they want or require to protect them from an unwanted or undesirable condition (Gillespie et al. 2007). That is why the WHO defines unfair differences within and between groups as a social injustice (Marmot et al. 2008). For example, the differences in mortality related to socioeconomic groups is an inequity because the poor do not have the same access to health care services as the rich, while they aspire to the same healthy lives. However, a difference in fertility between the rich and poor due to the differences in desired fertility is not an inequity since poor have higher fertility because they want to have more children (Creanga et al. 2011).

According to Kilbourne et al., (2006), disparities in family planning are due to three categories of factors: individual's preferences and behaviors which include the differences in knowledge and attitudes about contraception and pregnancy; reproductive health care system factors which refer to access to family planning services that may be hindered by poverty, geographic distance, etc., and provider-related factors which may play a role through unequal treatment of individuals or a pressure to use some types of contraceptives.

As several African countries, Rwanda has experienced similar poor-rich inequalities in contraceptive use. However, with the last up-scaling family planning program decade, poor populations and those living in rural areas recorded higher uptake. For instance, compared to the overall CPR increase of three times, from 17% to 53% between 2005 and 2014 that of uneducated women increased by more than four times, from 11% to 48% while better educated progressed from 41% to 55% (NISR, 2015). The question is how does this happen? What factors have driven this exceptional behavior among the poor? According to literature, the differences in contraceptive use are due to the differences in the demand for children or/and to the differences in family planning services leading to more or less access and acceptance of contraceptives.

This paper aims to analyze the pathways through which the contraceptive gap between poor and rich is narrowing in Rwanda. More specifically, the research examines the extent to which the demand for

children has evolved differently between rich and poor and how the differences in trends are associated with the change in family planning services in terms of types of contraceptive methods used and sources of supply. Understanding these mechanisms is essential for both family planning providers and policy makers. It may help Rwanda to evaluate its FP program and take the best way towards a sustainable population growth control. It is also useful for other countries to improve their FP programs for more effectiveness. Findings could also advance the theory on the mechanisms through which poor populations increase their contraceptive uptake.

The rest of the paper is as follows. After a brief presentation of the recent positioning of family planning in section 2, the paper brushes the methodology used in section 3and presents the results in section 4. The conclusion and discussion constitutes section 5.

2. Renewal of family planning attention in Rwanda

Recognizing that population growth is one of the major barriers to achieve the ambitious Rwanda vision 20201 for development, the Rwandan Government has since 2007 decided to reposition family planning as a determinant factor of the success of the vision. To translate this commitment in facts, various actions were taken including a massive public family planning campaign to raise and strengthen the demand for family planning, the improvement of the quality of services and the increase of access to family planning services through the augmentation of delivery points (MOH, 2006).

Since 2007, family planning was stated as a government priority program aiming to curb the high rate of population growth that compromises the development efforts. Thus, an intensive public education campaign started to raise awareness on the necessity of reducing fertility. All key personnel and leaders including local administrators and health staff were requested to participate in sensitization (MOH, 2008). As indicated in the family planning policy manual, many ministries[2] were requested to insert family planning campaign in their agenda, either by providing necessary support or sensitizing the population. The Rwandan Parliamentarians' Network on Population and Development, a commission created in 2003, played an important role in this campaign by going up to lower administrative units. Several channels of communication were used including television and radio, meetings with men and religious leaders to support family planning program, etc. Particular innovations have been the introduction of community health workers (CHW) service positioned at village level and the mass mobilization using the monthly community service meetings, called 'Umuganda' in national language.

Additionally, to family planning campaign, great efforts were made to increase the availability of a range of modern contraceptive methods and to promote long-acting methods, including male sterilization. The improvement of services delivery benefited also a systematic training of health centers staff to increase their performance.

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[1] This is a vision aiming to raise Rwanda to a middle income country sat in 2000.
[2] Ministries of Education, Local government, Gender and Promotion of Women, Finance, Youth, Health, Defense, Trade, tourism and security, etc.

One particular challenge of the Rwandan health system in regard to family planning is that many health facilities are 'faith-based' and as a consequence do not offer modern contraceptives. To overcome this barrier, the government decided to construct "secondary posts" not far from religious-affiliated health facilities to meet the needs of individuals from those areas. This solution has increased access to health facilities for many clients. In addition to these direct initiatives, family planning program implementation benefited from various system reforms that may had contributed to the success of the program. These include the Performance-Based Financing system of health facilities and Performance-contracts system of staff, as well as universal health insurance scheme which increased health facilities utilization.

3. Data and methods

Data and variables

This study uses a pooled dataset from the 2005, 2010 and 2014/15 Rwanda Demographic and Health Surveys (DHS). The research is restricted to married women as this is the standard sample used to measure the contraceptive prevalence rate. The key dependent variable is use of any contraceptive method. Contraceptive methods are grouped in modern methods classified as short-term (pills, injections, spermicides, female and male condoms, and LAM), long-term (IUD and implant), and permanent (female and male sterilization); and traditional methods which include periodic abstinence, withdrawal and other folkloric methods.

The main predictor is socioeconomic status measured by two indicators: educational level and household wealth index (Rutstein and Kiersten 2004) which is a proxy of income or expenditures. I use both indictors because there is no one variable measuring entirely what is poverty, but both education and the wealth index are highly associated. The variable education is presented in three categories: none, primary and secondary or more. The variable wealth index has also been recorded as tertiles (i.e. three categories of equal size), with categories labeled poor, middle, and rich.
Other independent variables include:
-    ideal number of children and the desire for family limitation among women with few children(1 to 3 children) to assess the reproductive attitude change;
-    types and sources of contraceptives to measure the differentials in contraceptive behavior.

The parity 1 to 3 children is chosen because it corresponds to the ideal family size mediatized in family planning sensitization in Rwanda.

Statistical methods

Descriptive statistics are used to show the patterns in contraceptive use, the trends in reproductive attitude, as well as the types and sources of methods used comparing the lower socioeconomic category to the higher. Multivariate logistic regression models are employed to estimate the effects of the predictors on contraceptive use, and especially to evaluate how the gap between the poor category and the rich varied over time. To assess this change, we use three models. The first includes all three predictors (education, wealth index and years) and all five control variables. The second adds to the first

an interaction between education and survey year. Similarly, Model 3 adds to Model 1 an interaction between household wealth index and survey year. The multivariate analysis has included in the analysis as control variables woman's age, number of living children, religion, rural-urban residence, and fertility preferences. The STATA 13 command xtlogit is used to perform the logistic regression.

The equation of logistic regression is:

$$\ln \left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_1 X_1 * \text{Year} + \varepsilon$$

Where: $\ln \left(\frac{p}{1-p}\right)$, the logit or log odds. In this case, it is the log odds of using any contraceptive method,

β_0 is the intercept; $\beta_1, \beta_2, \beta_3,$ coefficients of a set of independent variables X_1, X_2, X_3;

$\beta_1 X_1 *$ Year the interaction effects of the variable X_1 and the year of survey; and ε the residuals.

4. Results

Sample Characteristics

Table 1 describes the sample composition according to different variables. Over the 10 years that this research covers, education displays a pattern of progress. The proportion of women with no education drops significantly from 29% in 2005 to 19% in 2010, and 16% in 2014; that of women with a primary level increases by 9 percentage points from 61% to 70% while that of women who reached the secondary education or higher rises markedly by 50% from 10% to 15%. The large majority of women in the sample are Christians with equal distribution between Catholics and Protestants (41% each). Overtime, Catholics are diminishing while Protestants are increasing. The percentage of Adventists remains largely the same as 13% at each period. Muslims are very few as 2% in all surveys. Nearly half of the women (46%) are aged 25-34 years, more than half (54%) have 1-3 children and 6% have not yet had a child. Large families of 6 children or more represent on average 15% of the sample but are diminishing significantly across periods from 18% in 2005 to 16 % in 2010 and to 12% in 2014.

Table 1 also demonstrates that half of the women do not want any additional child with little variation across surveys and that only few as 10% need a child within two years. On average, 40% of the respondents state willing the next birth later (after 2 years) or longer (untimely). Most of the women using contraception (68%) still choose Short-Acting Methods (SAM) against 16% for Long Acting Methods (LAM) and Traditional Methods (TM) each. The distribution has however changed across years: LAM are increasing (6% to 20%) while traditional methods are seriously dropping from 40% in 2005 to 13% in 2014. The public sector is the predominant provider of contraceptives; but in 2010 the community health worker service emerged and attracted the third of clients (33%). The private sector has dramatically declined from 28% to 7%.

Table 1. Sample characteristics

Variable	Category	2005	2010	2014	Total
	All	5,458	6,834	6,890	19,182
	None	29.0	19.3	15.9	20.9
Education	Primary	61.1	69.3	69.6	67.1
	Secondary +	9.9	11.4	14.5	12.1
	Poor	33.0	33.3	33.3	33.2
Household	Middle	33.5	33.3	33.3	33.4
Wealth index	Richer	33.5	33.4	33.3	33.4
	Catholic	44.6	42.0	38.2	41.4
Religion	Protestant	37.7	40.1	45.2	41.2
	Adventist	13.3	14.4	13.0	13.6
	Muslim	2.0	1.57	2.3	1.9
	Others	2.4	1.95	1.4	1.9
	15-24	18.6	15.5	13.4	15.6
Respondent's age	25-34	43.2	47.0	47.3	46.0
	35-49	38.2	37.5	39.3	38.3
No living	0	6.0	6.2	5.1	5.8
children	1-3	51.0	52.3	57.4	53.8
	4-5	24.6	26.0	25.3	25.4
	6+	18.4	15.5	12.2	15.1
	Within 2				
Desire for	years	11.4	8.4	10.3	9.9
more children	After 2 years	41.5	37.8	40.7	39.9
	No more	47.0	53.8	49.2	50.2
Current contr	SAM	54.2	71.2	67.5	67.5
method used	LAM	6.4	15.1	20.0	16.3
	Traditional	39.5	13.7	12.5	16.2
Source of	Public	71.7	81.3	59.9	70.7
Method used	Community	0.2	10.1	32.6	19.6
	Private	28.2	8.6	7.4	9.7
	Total	586	3,117	3,146	6,849

SAM: short Acting Methods   LAM: Long Acting/Permanent Methods

Source: *DHS Rwanda 2005, 2010, 2014*

Contraceptive use in Rwanda over the last decade: are socioeconomic disparities narrowing?

Table 2 shows the trends and the differentials in contraceptive use by education and household wealth levels. Both indicators appear to follow a pattern of narrowing of the poor-rich inequalities in the use of contraception over the years. The change is larger between 2005 and 2010. There is a sharp increase from 11% to 43%, among women with no education versus a relative less increase among those with secondary or higher education (41% to 61%). In the following period 2010-2014, the increase was observed only among women with no education (43% to 48%) while the better-educated women inversely experienced a decrease from 61% to 55%. As a result, better-educated women were about 3.7 times (41% versus 11%) more likely than those with no education to use contraception in 2005; the ratio dropped to 1.4 in 2010 and to 1.1 in 2014 (see table2).

The same 2 (which one) table confirms the declining contraceptive use gap between poor and rich women as measured by the household wealth index. Similarly, to the educational level, while in 2005 women from rich households were two times more likely to use contraception than their peers residing in poor households (CPR of 26% versus 13%), the gap dwindled to around 1.3 in 2010 and 1.2 in 2014. This pattern is a result of a higher and steadily contraceptive uptake among poor women (13% in 2005, 45% in 2010, and 48% in 2014) and a steep increase followed by a stall among those from rich households (from 26% in 2005 to 58% in 2010 and then 57% in 2014. Women from middle wealth households pattern like those from poor households.

Table 2: Trends in contraceptive use, Rwanda 2005, 2010 and 2014

	Education				Household wealth index			
Period	None	Primary	Secondary	N/S Ratio	Poor	Middle	Rich	P/R ratio
2005	11.1	17.3	41.2	3.7	12.9	14.5	26.1	2.02
2010	43.3	53.0	60.5	1.4	45.0	53.4	57.7	1.28
2014	48.4	54.1	55.4	1.1	48.4	55.1	56.6	1.17

The multivariate analysis (table 3) confirms the tendency of convergence. Model 1shows a high CPR increase between 2005 (reference category) and 2010 (log odds of 1.69) and 2014 (log odds of 1.74) and educational and wealth disparities in the use of contraception. Since all categories are statistically positive and significant, it indicates that, on overall, these categories are more likely to use contraception than the reference categories (women with no education or poor). Model 2 and model 3 which present the interactions between education or household wealth and years of survey display negative coefficients of almost all interaction terms indicating the significant decline of educational and household wealth gaps in contraceptive use overtime. Of course, larger drop occurred between 2005 and 2010 than between 2010 and 2014. The fact that these parameters enlarge with years indicates a continuing gap dropping.

Table 3. Logistic regression effects of education and household wealth on contraceptive use in Rwanda

Variable	Model 1		Model 2		Model 3	
	Coef.	P.V	Coef.	P.V	Coef.	P.V
Intercept	-6.287	***	-6.443	***	-6.351	***
Survey Year (ref. 2005)						
2010	1.687	***	1.882	***	1.747	***
2014	1.738	***	2.089	***	1.908	***
Education (ref. none)						
Primary	0.335	***	0.453	***	0.335	***
Secondary and above	0.701	***	1.553	***	0.703	***
Wealth index(ref. poor)						
Middle	0.250	***	0.257	***	0.118	
Rich	0.403	***	0.414	***	0.724	***
Education in 2010/2014 (ref 2005)						
Primary in 2010			-0.093			
Primary in 2014			-0.245	**		
Secondary in 2010			-0.938	***		
Secondary in 2014			-1.306	***		
Wealth index in 2010 (ref 2005)						
Middle in 2010					0.222	*
Middle in 2014					0.111	
Rich in 2010					-0.306	***
Rich in 2014					-0.541	***

* p <0.10 ;   ** p < 0.05;   ** p < 0.001

Model 1 controls fro number of living children, fertility preferences, woman's age, religion, and urban-rural residence

Model 2 adds to model 1 the interaction effects of woman's education and year of survey

Model 3 adds to model 1 the interaction effects of household's wealth index and year of survey

Source: DHS 2005, 2010, 2015

Trends in desired family size and demand for family limitation

As seen in table 3, over the 10 years, the desired family size has been declining in all socioeconomic groups with however different paces. With reference to education, the decline is higher among women with no or little education (-0.7 or -0.8 children) than among those with better education (-0.2 children). As result, the excess desired fertility of 1.2 children (4.7–3.5) expressed by women with no education in 2005 drops down to 0.6 children in 2010, and 0.7 in 2014. Looking to wealth index, the 0.3 more desired children of poor over rich observed in 2005 disappears in 2010/2014. This is a result of more decline among poor (-0.9% points) than among rich (-0.6% points)

Additionally, to the mean ideal number of children, results indicate that across years women were more likely to limit their offspring at a low parity. The proportion of uneducated women with 1 to 3 children desiring to limit their fertility increased by 7.5% versus -0.7% for those with secondary education or more with the same parity. Comparable results are displayed with household wealth index (table 3). The proportion of women with 1 to 3 children who stated not wanting an additional child increased by 4.2 percentage points among poor while it slightly decreased among rich (-1.4). The poor-rich gap which was 5 percentage points vanishes in 2014. Again, the major change occurred between 2005 and 2010 than between 2010 and 2014 where there is a stall. These fertility attitude developments could explain why the uptake became higher among women with no education or poor.

Table 4: Mean ideal number of children and percentage of women with 1-3 children desiring to limit childbearing

Mean ideal number of children			
Education	2005	2010	2014	Change2005 to 2014 (in % points)
No education	4.7	4.0	4,0	-0.7
Primary	4.4	3.6	3.6	-0.8
Secondary	3.5	3.4	3.3	-0.2
Household Wealth				
Poor	4.5	3.6	3.6	- 0.9
Middle	4.5	3.7	3.7	-0.8
Rich	4.2	3.6	3.6	-0.6
Proportion of women with 1-3 children desiring to limit childbearing				
All	*27.3*	*32.6*	*30.3*	*3.0*
Education				
No education	30.1	40.2	37.5	7.5
Primary	25.1	31.0	30.1	5.0
Secondary+	33.6	33.9	26.3	-0.7
Household Wealth				
Poor	26.0	33.0	30.2	4.2
Middle	24.5	30.4	30.6	6.1
Rich	31.3	34.5	29.9	-1.4

Source: DHS 2005, 2010, 2014/15

Types and sources of contraceptive methods used: socioeconomic differences

The distribution of married women using any contraceptive method by the type of method used grouped in Short-Acting Methods (SAMs), Long-Acting/permanent Methods (LAMs) and Traditional Methods (TMs) shows a dramatic decrease overtime of traditional methods (from 39.5% to 12.5%) and an increase

of modern methods (Table 5). Among modern methods, short term effects increased between 2005 and 2010 and went down thereafter while LAM make a continuing increase from 6.4% to 15.1% and 20.0%. These changes suggest a shift to more effective methods.

Looking to educational level, the decline of traditional methods has surprisingly been important among the less educated population (-67% from 46% in 2005 to 15% in 2014) than among the better educated (-42% from 26% in 2005 to 15% in 2014) (table4). In opposite to traditional methods, the use of modern methods raised more among the less educated population than among those with higher education, especially for LAM which increased by 3.8 times among women with no education versus only 2.0 times among those with secondary or more. Similar results are found with the household wealth index indicator. These changes have reduced the gap in the use of LAM between less educated and better educated from a ratio of 1/3.2 to that of 1/1.6.

With reference to source of current modern method used (table5), the public medical sector remains the main provider of contraceptives in Rwanda across years even if it declined substantially (by 26%) between 2010 and 2014. The use of private sector has similarly dramatically declined from more than the quarter of users (28.2%) to less than 10%. The decline of public and private sources was due to the introduction of the Community Hearth Workers service (CHW), inexistent in 2005 but increased to 10% of users in 2010 and 32.6% in 2014. Relative to educational level, results indicate that the public sector has diminished only among the less educated population (84.2% to 55.8%) while it was slightly increasing among the better educated ones (59.6% to 63.9%). Instead, the contribution of CHW rose from 0 in 2005 to 11.9% in 2010 and 41.2% in 2014 among women without education. The corresponding proportions for women with secondary education or more are 0 in 2005, 6% in 2010 and 15% in 2015. Although in declining, the private sector remains an important provider among the better educated people (21% in 2014). Similar patterns are found with the household wealth index (table 5).

Table 5. Distribution of married women using contraception by method used

Variable/	**Short Acting**			**Long Acting/permanent**			**Traditional**		
Category	**2005**	**2010**	**2014**	**2005**	**2010**	**2014**	**2005**	**2010**	**2014**
All	54.2	71.2	67.5	6.4	15.1	20.0	39.5	13.7	12.5
Education									
None	49.4	70.2	67.4	4.6	15.9	17.3	46.0	13.5	15.3
Prim	53.6	73.9	70.0	3.8	13.3	18.7	42.6	12.7	11.3
Second+	59.5	57.8	56.3	14.4	24.2	28.5	26.1	18.0	15.2
Household Wealth Index									
Poor	45.1	76.1	76.0	4.3	11.1	15.7	50.6	12.8	8.4
Middle	51.5	73.8	69.5	4.5	14.3	17.2	44.0	11.9	13.3
Rich	60.1	64.9	58.4	8.4	19.0	26.4	31.5	16.1	15.2

Table 6. Source of modern contraceptive method

Characteristic	Public			Private			Community		
	2005	**2010**	**2014**	**2005**	**2010**	**2014**	**2005**	**2010**	**2014**
All	*71.7*	*81.3*	*59.9*	*28.16*	*8.6*	*7.44*	*0*	*10.1*	*32.6*
Education									
none	84.2	84.2	55.8	15.79	3.85	2.96	0	11.9	41.23
primary	73.9	84.0	59.9	26.06	5.68	5.63	0	10.37	34.46
secondary +	59.6	63.5	63.9	39.75	30.37	20.8	0.	6.2	15.26
Household wealth index									
Low	84.4	85.5	59.7	15.7	2.1	3.0	0.0	12.4	37.3
Middle	78.5	86.7	59.5	21.5	3.2	3.1	0.0	10.2	37.4
Rich	64.0	73.0	60.5	35.7	18.9	16.0	0.0	8.2	23.5
None/second ratio	1.41	1.33	0.87	0.40	0.13	0.14	0.0	1.9	2.70
Low/Upper ratio	1.32	1.17	0.99	0.44	0.11	0.19	0.0	1.5	1.59

5. Conclusion and Discussion

Results show that there has been an impressive overall increase in contraceptive use in Rwanda between 2005 and 2014, with the higher uptake among the poor population. The increase was higher between 2005 and 2010 than in the following period. The observed stall after 2010 may be due to the sharp increase recorded in 2010 marking a "plateau effect" since most of the women with unmet needs had already adopted FP, but also to the weakened family planning sensitizing campaign consecutive to the reduction of donors' funds.

Several factors that explain the success of family planning and the higher progress among the poor can be identified. As indicated in the findings, the first factor is the mindset change with regard to desired family size. Indeed, unlike many sub-Sahara African countries, the preferred family size in Rwanda has significantly declined, reaching a lower average of 3.3 children. The large majority (64.3%) of women in reproductive age including the poor population declare preferring 3 or 4 children. This uncommon characteristic has been attributable to lack of sufficient land in rural areas, which makes parents not want to have many children (Muhoza, 2014). On average, a household plot of land to be used for cultivation, constructions and other domestic activities consists of less than 0.8 ha (Musahara, 2004). As consequences, the agricultural production is too limited and thus insufficient to feed a large family, and rural residents are unemployed during a large period of the year. Children are therefore regarded as being

of no benefit because they are not utilized whereas participating in household production is the main motivation for having many children in agrarian countries. Instead, many children are considered as a burden to parents in terms of their basic needs to be satisfied. The lack of benefits from large families has, therefore, compelled the population, and especially rural and poor people, to prefer small families as their rich counterparts. The 2014 DHS revealed that around half of Rwandan women in reproductive age do not want an additional child compared to only 26% in Tanzania, 38% in Uganda and Burundi[3].

The second factor is the improvement of reproductive health services through the introduction of community health workers service, the extension of FP services in underserved areas, and the promotion and extension of LAM to lower health service units; these are health centers. As the results show (table 5), the dramatic increase in contraceptive use observed in 2010 is associated with, among other factors, the introduction of community health workers (CHW) service since 2007 (Condo, 2014). This new channel of contraceptive sensitization and supply, inexistent in 2005, which served 10% of the users in 2010 and 32% in 2014, seems to have been a driving ingredient for the success. In Rwanda, community health workers service is a formal part of the national health strategy. It is one of the strategies designed to reach more people (MOH, 2006). Community health workers play an important role in alleviating the shortage of human resources, particularly in rural areas where they serve as intermediaries between the community and the formal health system. For Didi Bertrand[4], *"Community health workers are the most valuable component of a strategy to extend primary health services to rural communities."* In Rwanda, each village (100 to 150 households) is equipped with three CHWs (two females and one male) in charge of monitoring and promoting maternal and newborn health including FP. CHWs are elected from their village of residence and are required to be honest, reliable, and trusted by the community (Condo, 2014). As such, they benefit a great community respect although they are not significantly remunerated. Condo et al. (2014) have pointed out their key role in the recent impressive reduction of maternal and child mortality in Rwanda.

This finding adds to the existing evidence demonstrating the determinant role of CHW programs in rising contraceptive use among the poor (Lemani C. et ali. 2017; USAID, 2015; Stanback J., Mbonye A. K., Bekiita M. 2007). Evidently, the effectiveness of programs varied across country contexts. Wherever the study was conducted, health and economic advantages were acknowledged by the population.

The increase of access by utilization of CHW was completed by the multiplication of FP delivery points through the construction of secondary posts in the regions traditionally served by the faith-based health centers which do not provide modern contraceptive methods. This innovative solution reduced the distance covered by the clients and contributed to popularizing family planning across the country, especially in rural areas where these secondary posts were constructed.

Additionally to increased access, high uptake benefited from the diversification of contraceptive methods whereby contraceptives with long-acting effects were promoted (MoH, 2006) to replace the ones with short-acting effects in order to reduce contraceptive use discontinuation. The shift from short to long-

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[3] Source: Tanzania 2014 DHS, Uganda 2016 DHS, and Burundi 2014 DHS
[4] Farmer Director of the Community Health Program, Inshuti Mu Buzima (PIH Rwanda)

acting methods was facilitated by the existence of high need for family limitation. As indicated above, most of the women expressed not wanting an additional child.

Policy Implications

This research on contraceptive use convergence between the poor and the rich in Rwanda has revealed that the higher increase in CPR among the poor was due to a number of innovative strategies that removed the existing barriers and consequently responded to the population needs. It is, however, important to note that the effectiveness of these strategies is appropriate to Rwandan context. Their exportation in other contexts may not yield similar outcomes. In Rwanda, the family planning program found a fertile ground where people were with unmet needs for family planning services, consecutive to low demand for children, hence preparing couples to subscribe to FP. This finding implies that if the governments want to engage poor people in FP, they should design country specific strategies.

The second lesson to learn is that the Community Health Worker service, more than other health systems, succeeded among the poor people and rural residents. This successful result confirms what Seth et al. (2015) found out in their research on the differential effects of community health worker visits across social and economic groups in India that CHW are effective in the most disadvantageous groups. Two factors contribute to this exceptional success. First, by being village resident members and meeting their clients at home, CHWs overcome the geographic barrier of distance and ensure intimacy of the service highly appreciated by the clients. Secondly, as stated by PIH (2011) CHWs know the community customs, norms and values and share life experiences with that community making them more convincing in their sensitizing interventions. The barriers that other family planning providers fail to address are solved by CHW. These advantages justify its recommendation in Sub-Sahara African countries still predominated by poor and rural populations. In this line, the study backs Scott et al. (2015) who recommend CHWs to be champion to further expand access to FP services particularly in regions with shortage of human resources for health.

The study also specifies that reaching poor and rural populations in Sub-Sahara Africa is reaching the whole country given their share in the total population. Rwanda experienced an overall contraceptive use increase because rural areas made higher progress. This implies that if the governments want to curb the current high population growth to improve the population living conditions and achieve a number of Sustainable Development Goals, they should invest more in rural areas.

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