Trends, patterns and determinants of long-acting reversible methods of contraception among women in sub-Saharan Africa

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Abstract

Huge variations exist in the use of different types of contraception, with short-term methods being the most common methods in sub-Saharan Africa (SSA). Evidence is scanty regarding the trends, patterns and determinants of long-acting reversible contraceptive (LARC) methods in SSA. This study provides empirical evidence on this. Using a pseudo longitudinal research design, we analysed Demographic and Health Survey data of eight countries selected on the basis of contraceptive prevalence rates across SSA. Multinomial logistic regression modelling was used to tease out the predictors of the uptake of LARC methods in the selected countries. Findings exhibit a steady but sluggish upward trend in LARC methods across countries. Significant predictors of LARC methods uptake included age, level of education, work status, wealth index, exposure to mass media, and fertility-related characteristics. This study underscores the need to address the various barriers to the uptake of LARC methods in SSA.

INTRODUCTION

Rapid population growth remains a major concern in many sub-Saharan African countries (SSA). This is due to its implication for diverse socio-economic ills and developmental and health challenges, including poor maternal and neonatal health, poor capital investment, environmental degradation, and poverty, etc. [1]. While Africa's population has continued to increase, much faster than it is in any other region of the world, it has also been projected to account for more than half of the world's population growth between 2015 and 2050 [2]. Remarkably, fertility rate varies significantly across countries in the SSA, with total fertility rate (TFR) ranging from 2.9 in Botswana to 7.2 in Niger [2]. One major reason for the persistent high fertility level across many SSA countries is the low level of contraceptive uptake and high unmet needs for contraception, either for limiting or spacing[3-5]. Although, contraceptive prevalence rate (CPR) has increased across a number of SSA countries (such as Malawi, South Africa, Rwanda etc.), the region still has one of the lowest rates of CPR globally [6] with a huge sub-regional differences [7].

A critical look at the sub-regional disparities in contraceptive prevalence across SSA reveals an interesting pattern. For instance, Southern African sub-region has a high contraceptive prevalence rate of about 62 percent, almost exclusive of modern methods and unmet need for family planning is relatively low at 13 percent (Alkema et al., 2013). This is in contrast to Western Africa where the unmet need is 25 percent and contraceptive prevalence rate is estimated at 15 percent [8]. As expected, these averages vary within the geographic regions. For example, modern contraceptive prevalence rate (mCPR) was estimated at 11 percent among Nigerian women, 18 percent among women in Ghana and 9 percent among their counterparts in Senegal [9]. These low rates of mCPR have been associated with high rates of unintended pregnancy in the region [10]. These have serious public health implications as unintended pregnancies are a leading cause of maternal and child mortality in SSA [11].

Although the annual number of global maternal mortality has substantially decreased from 532 000 in 1990, to 303 000 in 2015, it still remains very high in sub-Saharan Africa, as the region accounts for around two-thirds of the current level of maternal deaths (66.3%) [12]. The use of appropriate contraceptives among women which varies at different phases in their lives has been identified as a critical component in their reproductive health and socio-economic development. Very importantly, family planning has been reported to be key in the reduction of poverty, improved economic growth, increased female productivity by reducing their fertility and ensuring child survival and improved maternal health [13,14]. It has also been suggested that continued investment in family planning could be crucial for the attainment of the sustainable development goals [15,16].

A number of interventions have been put in place to improve contraceptive use among women but the socio-economic differences in the use of contraception still persists [17]. These disparities arise as a result of disadvantaged women being deprived of contraceptives they want to use to protect them from unwanted pregnancies [18]. According to Creanga, *et al.* [19], examining differences in contraceptive use and fertility intentions through an equity lens allows us to understand whether women are being deprived of something they wish they had (i.e. right types of family planning) to avoid something they do not desire (i.e. pregnancy). With respects to family planning types, studies have established that women who intend to stop childbearing but use a short-term or spacing method of contraception are not meeting their need, and neither are women who merely want to space births but use a long-term or permanent contraceptive method [5,20].

Specifically, contraceptive methods can be grouped into two categories. These are long-acting reversible or permanent contraceptive methods (like intrauterine devices, implants, and sterilization) and short-term methods (like pills, condoms, spermicides, injectables, and other modern methods, and all traditional methods). Long-acting reversible or permanent

contraceptive methods are generally used to limit childbearing, whereas short acting methods are important for birth delay and birth spacing. The factors associated with the use of these methods varied [21]. Long acting contraceptives have been described to have low failure rate, safer and cost effective compared to short acting contraceptives [22,23]

It has been established that women in sub-Saharan Africa are often unable to obtain or use modern contraception, particularly the long acting methods, for many reasons associated with both supply and demand sides[24-26]. They rely primarily on traditional and short-acting contraception, which are prone to incorrect or inconsistent use and failure [27,28]. Meanwhile, many long-acting reversible contraceptive (LARC) methods provide more than 10 years of highly effective protection against pregnancy.

LARC methods are among the safest, most cost-effective, and reliable forms of contraception available today [29,30]. Despite this, LARC methods are still being underutilized in SSA, where they could benefit millions of women seeking to control their fertility. Relatively few studies have sought to examine the determinants of these methods. It is important to have a summarized and up-to-date evidence on the trends, patterns and determinants of these methods as this would deepen understanding about the challenges facing intending users of LARC. Besides, evidence from this analysis could guide the design of appropriate programmes and strategies to increase the availability, accessibility and utilization of LARC across the SSA. Therefore, a study on the uptake of long acting contraceptive methods is a top priority action to improve its accessibility and utilization. Against this background, this study aims to (1) document the trends and patterns of long-acting reversible contraceptive methods and (2) identify its determinants in the selected countries.

DATA AND METHODS

Study design and participants

The study utilized data from eight different countries, representing the four sub-regions in SSA namely: Malawi and Rwanda in Eastern Africa, Cameroon and Chad in Middle Africa, Zambia and Zimbabwe in Southern Africa and Ghana and Mali in Western Africa. These representative countries were selected on the basis of their contraceptive prevalence rates and subject to the criterion of having conducted the most recent Demographic and Health Survey (DHS) since 2010.

Data were obtained from the DHS website, with permission from the DHS Program. These include information on socio-economic, bio-demographic characteristics, and contraceptive practices among women of reproductive ages (15-49 years). We use three standard DHS datasets for each of the eight selected countries. These are data from 2004, 2010 and 2016 Malawi DHS; 2005, 2010 and 2015 Rwanda DHS; 1998, 2004 and 2011 Cameroon DHS; 1997, 2004 and 2015 Chad DHS; 2002, 2007 and 2014 Zambia DHS; 2006, 2011 and 2015 Zimbabwe DHS; 2003, 2008 and 2014 Ghana DHS; and 2001, 2006 and 2013 Mali DHS.

The study employed a pseudo longitudinal research design in that it examines the trends, patterns and determinants of LARC uptake over time in the selected countries.

Variables measurement

The dependent variable is the current use of modern contraceptive methods, defined as the type of contraceptive method that a respondent was using at the time of the survey. We measured this variable in three categories as ‘not using any method’, ‘using LARC’ (including the IUD and Implants/Norplant) and ‘using other methods’ (all of which are different from the LARC such as pill, injections, condom, withdrawal, periodic abstinence and so on).

The selected independent variables (and their respective categories) include respondent's current age (15-24, 25-34 and 35+), level of education (no formal education, primary, secondary and higher), occupation (unemployed, managerial, clerical/ agric. and labour), wealth index (poorest, poorer, middle, richer and richest) and exposure to mass media (no exposure at all and having an exposure). Other selected covariates are place of residence (urban and rural), country of residence (Cameroon, Chad, Ghana, Malawi, Mali, Rwanda, Zambia and Zimbabwe), marital status (never married, married/ living with partner, widowed, separated and divorced); fertility factors namely CEB (none, 1-4 children and 5 and above) and desire for more children (want another and no desire).

Statistical analysis

Data were analysed with Stata software (version 13.0). Multiple bar chart was drawn which visually displays the trends in the use of LARC across the selected countries. The bivariate analysis was carried out using Chi-square test in order to measure the significance of association between the predictor variables and use of LARC from the pooled data for all the selected countries. More so, at the multivariable level of analysis, we predicted the influence of the individual characteristics and fertility-related variables on the relative risk of using LARC by employing the multinomial logistic regression model from the pooled data for all the selected countries.

RESULTS

Trends and differentials in LARC uptake by selected characteristics

There has been a general upward trend showing that LARC uptake has overtime continued to gain some increase among users in most sub-regions in SSA (as shown in Figure 1). For instance in Malawi, LARC uptake increased from 0.46% in 2004 to 9.76% in 2016 and in

Zimbabwe, LARC uptake steadily increased from 1.04% in 2006 to 8.51% in 2015. Differentials in the use of LARC were associated with the level of education, wealth quintile and place of residence. Education was positively associated with the use of LARC particularly among countries in Eastern and Southern Africa (see Figure 2). In Malawi, for instance, the use of LARC among women who attained higher education had increased from 3.12% in 2004 to 10.23% in 2016. Likewise in Zimbabwe, the use of LARC among women who had attained higher education had increased from 6.92%% in 2006 to 11.46% in 2016.

[Figures 1 and 2 about here]

LARC uptake also varied by the wealth quintile particularly among selected countries in Eastern and Southern Africa (see Figure 3). Rwanda's use of LARC among women from richest households had risen from 0.83% in 2005 to 7.28% in 2015. Similar trend occurred in Zimbabwe where use of LARC among women from poorest households (0.1% in 2006) and those from richest households (2.79% in 2006) had risen to 7.05% and 9.27%, respectively in 2016. With regards to the place of residence, greater proportions of women in the urban areas than those in the rural areas adopted LARC particularly among selected countries in Eastern and Southern Africa (as shown in Figure 4). In Malawi, for instance, the use of LARC in urban areas (1.04% in 2004) and rural areas (0.33% in 2004) had increased to 10.21% and 9.66% respectively in 2016, while use of LARC in urban and rural Rwanda had increased from 0.79% and 0.11% in 2005 to 7.68% and 4.85% respectively in 2015.

[Figures 3 and 4 about here]

Association between LARC and Socioeconomic and demographic/Fertility Characteristics in Selected SSA Countries

The data showed that significant associations exist between the use of LARC and socio-demographic and fertility-related characteristics in the selected countries. The younger age

group 15-24 had lower proportion of use of LARC (1.34%) compared to the older age groups 25-34 and 35+ (4.03% and 2.88% respectively). The greater the level of education, the higher the uptake of LARC. Just 1.0% of women who had no education were using LARC, compared to 5.3% among those with higher education. With regard to marital status, LARC varied among the respondents who were separated (3.97%), divorced (3.72%), married/ living with partner (3.29%), widowed (1.64%) and never married (0.52%).

Having an occupation exerted positive influence on the use of LARC. Respondents in managerial position were the most likely to use the LARC contraceptives (6.26%), followed by those in manual labour (3.0%), clerical or agriculture (2.8%) and the unemployed being the least (1.89%). Increase in wealth index steadily improved the use of LARC, from 2.2% among respondents from poorest households to 3.84% among respondents from richest households. Respondents who had exposure to the mass media may be expected to adopt LARC greater than those who had practically no exposure to mass media. The data showed that 2.31% among the women who had no exposure and 3.29% among the women who had an exposure adopted LARC method.

Furthermore, respondents who were urban-based (2.98%) demonstrated slightly greater use of LARC compared to the rural respondents (2.44%). The distribution of LARC by the selected countries in SSA shows highest proportions of the LARC contraceptive usage in Malawi (4.62%), Zimbabwe (4.12%) and Rwanda (3.33%). The results show highest prevalence of use of LARC among Eastern and Southern African countries. The total number of children ever born was associated with LARC, as 0.11% of women who had no children, compared to 3.78% of women who had 1-4 children and 2.93% of women who had 5 children and above were reported as using LARC contraceptives. Among the respondents, 1.84% of those who wanted more children, and3.86% of those who had no desire for more children adopted the use of LARC

[Table 1 about here]

Effects of Socio-demographic and Fertility-related factors on the use of LARC in selected SSA countries

Table 2 shows the results of two multinomial logistic regression models. Model 1 describes the effects of socio-economic and demographic factors on the use of LARC, while Model 2 describes the effects of the socio-economic and demographic factors on the use of LARC, controlling for the fertility-related factors. In Model 1, changes in the relative risk of LARC were predicted by all the socio-demographic factors with the exception of exposure to mass media. The relative risk of using LARC instead of not using any method was significantly greater in the age group 25-34 (RRR = 2.04; CI: 1.88-2.23; p-value < 0.001) and age group 35+ (RRR = 1.47; CI: 1.33-1.63; p-value < 0.001) compared to the younger age group 15-24. The relative risk of using LARC was more likely to increase consistently by factors of 2.15 among women with primary, 3.19 among women with secondary and 4.65 among women with higher education, than women who had no education (p-value < 0.001).

In terms of marital status, the relative risk of using LARC was greater by 11.24 times among women who were married or living with a partner, 2.72 times among women who were widowed, 6.83 times among women who were separated and 7.49 times among women who were divorced, compared to women who were never married (p-value < 0.001). Likewise, the relative risk of using LARC was significantly greater by 1.35 times among women in managerial position, 1.25 times among women who were clerical/agric workers and 1.42 times among women who were labour workers, compared to women who were unemployed.

The relative risk of using LARC instead of not using any method was greater by 1.19 times among women from poorer household, 1.37 among women from middle households, 1.44 among women from richer households and 1.65 among women from richest households, compared to the women from poorest households.

As regards the place of residence, the relative risk of using LARC rather than not using any method was significantly lower among rural women when compared to the urban women (RRR = 0.85; CI: 0.76-0.96; p-value < 0.01) and by country, the relative risk of using LARC was significantly greater by 2.86 times in Mali, 4.26 times in Ghana, 7.47 times in Zambia, 8.77 times in Rwanda, 10.02 times in Zimbabwe, 13.36 times in Malawi, compared to Cameroon.

In Model 2, which adjusted for the effects of fertility factors, the socio-demographic factors remained significant predictors of the use of LARC. Likewise, total number of children ever born and desire for more children significantly influenced the relative risk of adopting the LARC method. The relative risk of using LARC was significantly greater among women who had 1-4 children by 41.14 times, and 54.33 times among women who had 5 or more children relative to the women who had no children. Women who had no desire for more children were 1.41 times more likely to adopt the LARC than women who desired to have more children.

[Tables 2 and 3 about here]

DISCUSSION AND CONCLUSION

The objective of this study was to examine the trends, patters and determinants of long-acting reversible methods of contraception among women in sub-Saharan Africa. Previous studies have established huge variations in method-specific contraceptive prevalence globally, with short-term methods being the most commonly used in SSA [5,31-33]. Meanwhile, evidence remains sparse on the trend and patterns of LARC use in SSA. Also, factors shaping their uptake across the region are less understood. This study provides empirical evidence on this. Using pseudo longitudinal research design, the paper documents interesting findings.

Results from trend analysis demonstrate a steady but sluggish upward slanting in the uptake of LARC methods across countries. This finding lends credence to existing literature regarding the heavy reliance on short-acting contraceptive methods in SSA [27,28]. Women who intend to stop childbearing but use short-term contraceptives are regarded as having unmet needs [5,20]. Although our analysis demonstrates a slow-paced increase in the uptake of LARC methods, the observed upward trend suggests increasing availability, accessibility and utilization of the methods across the region. Results also indicate about 100% increase in LARC uptake in Malawi, Rwanda and Zimbabwe over a 10-year period. With intensified efforts and programmes such as information, education and communication (IEC) on the social and health benefits of LARC, as well as other context-specific interventions, there would possibly be a continuous increase in the uptake of these methods across the region. Other findings confirm the importance of knowledge or information sharing. For instance, exposure to mass media played significant roles in influencing uptake of LARC methods.

There were differential patterns in the use of LARC methods by socio-economic characteristics such as educational attainment, wealth status and place of residence. For instance, use of LARC methods was more than three-fold higher among women with higher education compared to those with no education in many of the selected countries. As earlier noted, correct knowledge about LARC methods is a key factor to ensure increased and appropriate use. Considering that majority of women in many SSA countries are uneducated, educating them about the effectiveness, appropriateness and safety of different LARC methods would perhaps be an important step to increase uptake. Similar findings indicate that women from rich households and urban areas had a much higher uptake of LARC methods compared to their poor and rural counterparts. Existing studies have demonstrated generally low level of contraceptive use among poor and rural women –whether short-term modern or traditional methods [32,34,35]. Ensuring improved accessibility to LARC methods (which are

often beyond the reach of poor and rural women) would be a key factor to achieve increased uptake.

Furthermore, our results showed higher uptake of LARC methods among women employed in managerial occupation compared to other categories of women. The plausible reason for this is that women who engage in managerial occupation are likely to be more educated and knowledgeable about different contraceptive method choices. Besides, the desired or actual fertility level of women who undertake managerial responsibilities is likely to be very low, hence their propensity to adopting long-acting contraceptive method to achieve their fertility preference through appropriate child spacing or limiting. For reasons that appear obvious (such as lack of resources or means), uptake of LARC method was almost non-existent among the unemployed and poor women. A huge body of literature has highlighted high unmet need for contraception among these categories of women [33,36-38].

As has been previously established [39], uptake of LARC methods was significantly higher in selected East and Southern African countries compared to those in West and Middle Africa. Many of the countries in these sub-regions have massive untapped potentials for LARC methods uptake. Thus, findings of this study suggest that programmatic intervention for expansion of LARC methods, particularly across West and Middle Africa may be a promising way to support the achievement of the goals of FP 2020 which involve reaching people with unmet needs.

Further, our findings showed that older women were more likely to use LARC methods, compared to their younger counterparts. This may seem rational, and plausible reason may be because many long-acting contraceptives provide long years of protection against pregnancy [21]. However, LARC methods may also be regarded as suitable contraceptives for younger women, particularly because many of these long-term methods are reversible. Similarly,

married women had higher likelihood of using LARC method than those in other categories of marital status. Similar reasons cited above may be advanced for this finding. However, unmarried women may still adopt appropriate long-term reversible methods.

Our results also showed that likelihood of using LARC methods was significantly much higher among multiparous women, particularly those who had 5 or more children, compared to their childless counterparts. In addition, women who had no desire for more children were more likely to adopt LARC methods than those who desired more children. This is expected, as long-acting contraceptives are generally viewed as permanent contraceptive methods and are mostly used to limit childbearing [21]. Although LARC methods such as hormonal intrauterine devices (IUDs), copper IUDs, implants, and injections are long-acting, they are completely reversible and can be adopted also as contraceptives for child spacing. Adoption of these methods has faced enormous barriers due to early design errors, problems regarding insertion and removal, as well as myths and misconceptions about side effects [29]. Meanwhile, recent evidence shows that LARC methods that are currently available are safe, easy to use, effective, long lasting, and easily reversible with rapidly restored fertility upon reversal[21,29].

Although LARC methods have a high cost up-front, in the long term, they are more cost-effective than the short-term methods. The cost of adopting these methods may constitute serious demand side barriers for many women in the sub-Saharan Africa, particularly the uneducated, poor and rural women. Thus, this study concludes and underscores the need to address various barriers to the uptake of LARC methods in SSA. As part of country-level population policies and programmes aimed at reducing unwanted pregnancies and fertility, it is recommended that governments at different levels undertake to cover the costs of LARC methods in order to increase access and uptake.

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Figures

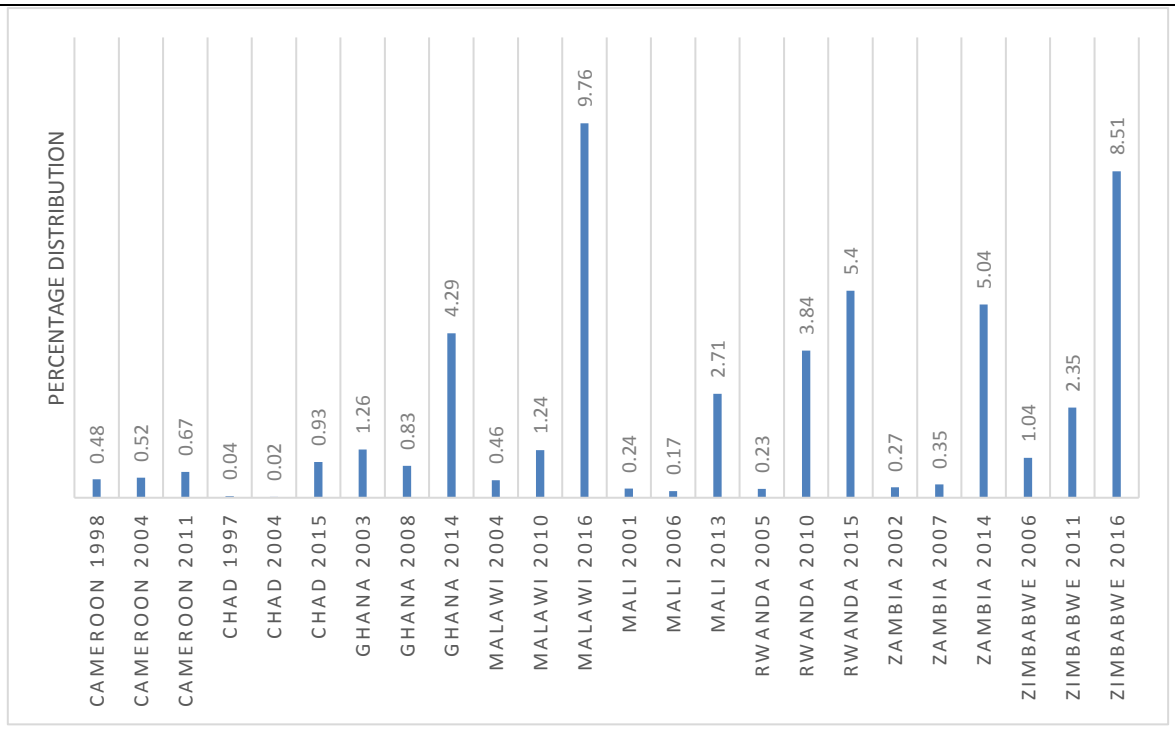

Figure1: Trend in the use of LARC in selected SSA countries

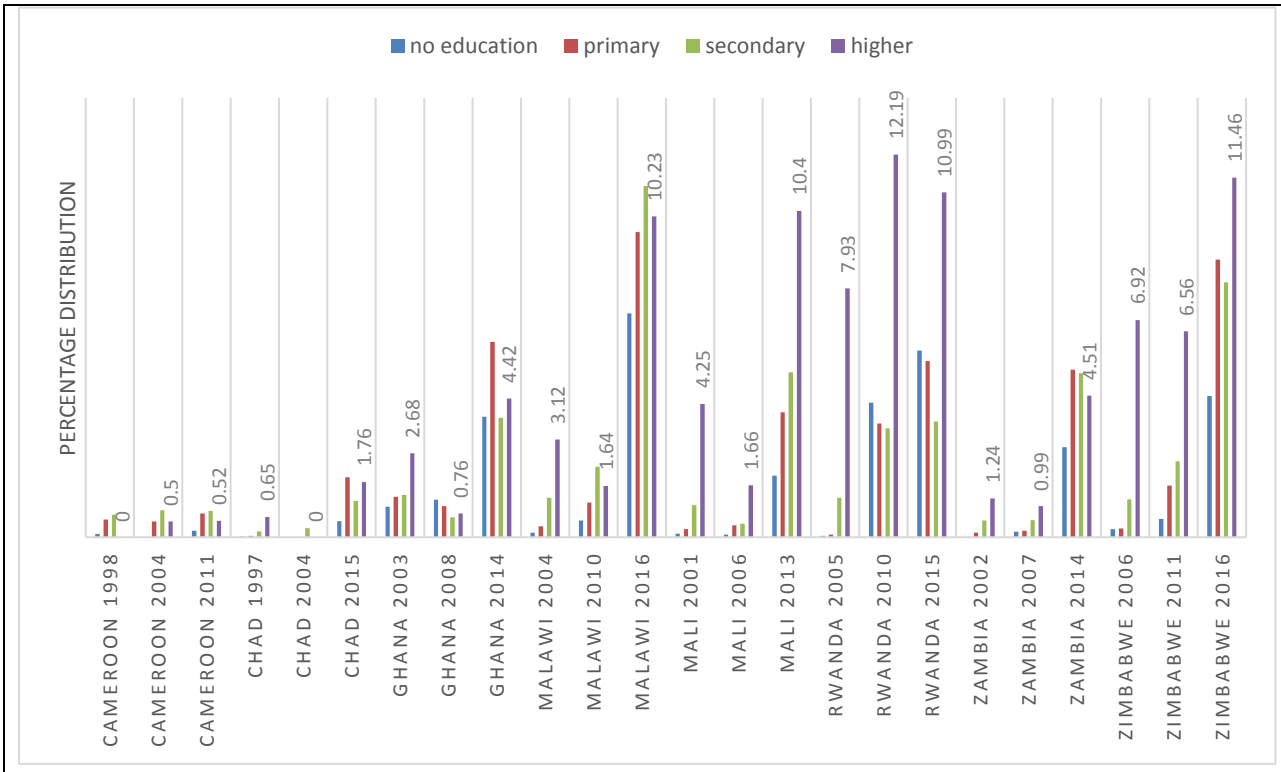

Figure 2: Percentage distribution of the use of LARC in selected SSA countries by level of education

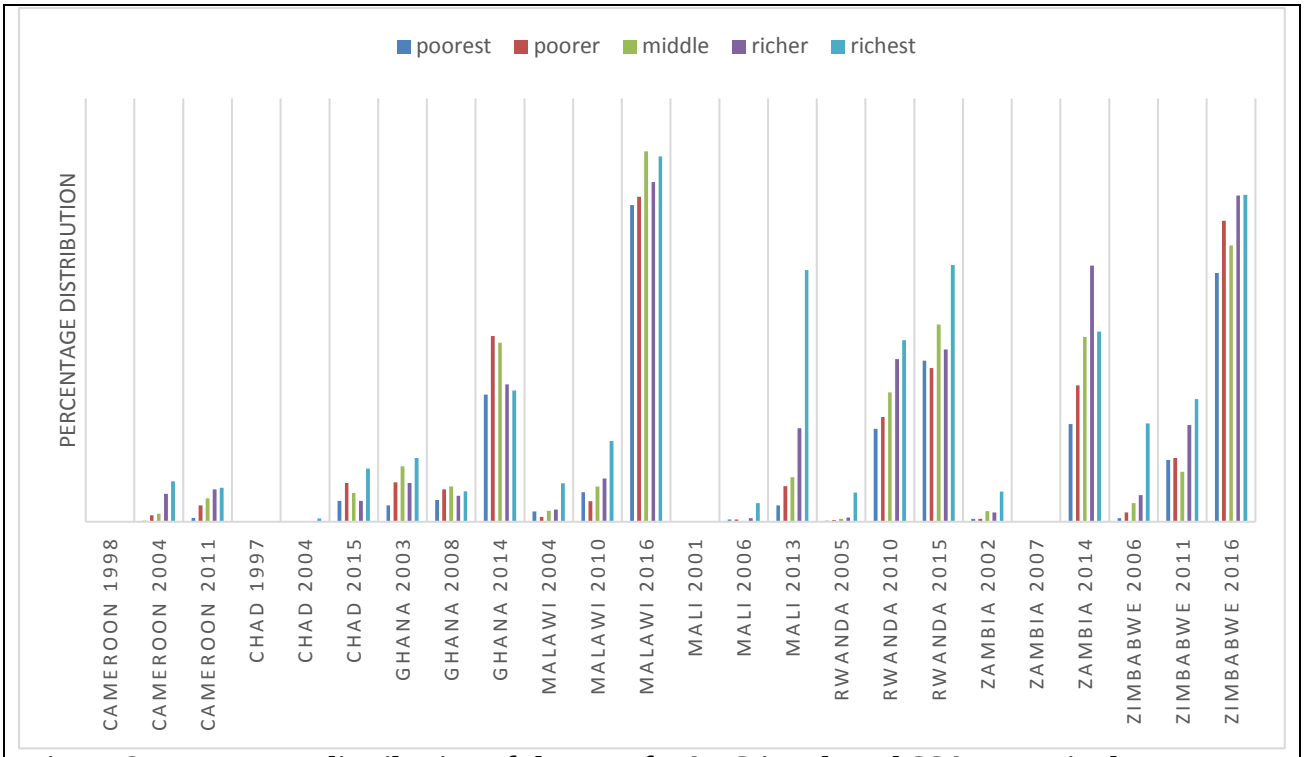

Figure 3: Percentage distribution of the use of LARC in selected SSA countries by wealth quintile

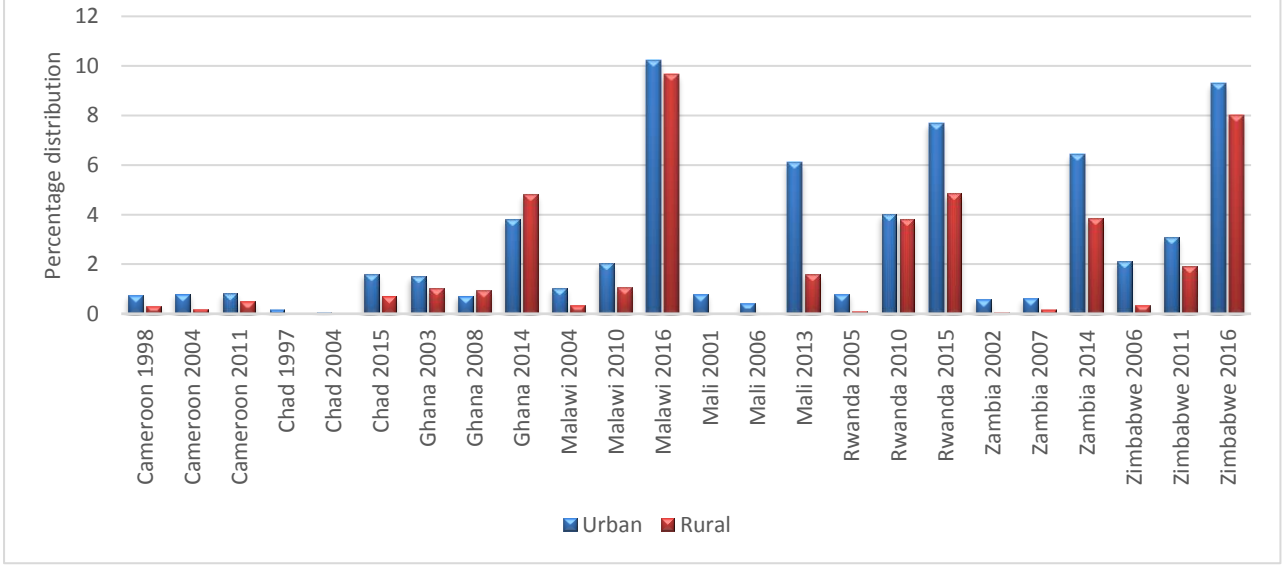

Figure 4: Percentage distribution of the use of LARC in selected SSA countries by place of residence

Tables

Table 1: Percentage Distribution of Women using LARC in selected sub-Saharan Africa Countries by Sociodemographic/Fertility characteristics

Characteristics	Not using any method (%)	Using LARC (%)	Using other methods (%)	Chi-square
Age				
15-24	82.91	1.34	15.75	1145.3***
25-34	66.6	4.03	29.36	
35+	71.24	2.88	25.88	
Total	74.57	2.61	22.82	
Education				
No education	88.49	1	10.51	947.4***
Primary	70.12	3.13	26.75	
Secondary	67.73	3.32	28.95	
Higher	58.58	5.3	36.12	
Total	74.57	2.61	22.82	
Marital status				
Never married	90.67	0.52	8.814	1030.2***
Married/ living with partner	68.06	3.29	28.66	
Widowed	85.4	1.64	12.97	
Separated	76.73	3.97	19.3	
Divorced	75.64	3.72	20.65	
Total	74.57	2.61	22.82	
Occupation				
Unemployed	79.23	1.89	18.88	211.9***
Managerial	56.49	6.26	37.25	
Clerical/ Agric.	72.52	2.8	24.69	
Labour	72.6	3	24.41	
Total	74.57	2.61	22.82	
Wealth Index				
Poorest	78.22	2.2	19.57	78.3***
Poorer	74.8	2.48	22.73	
Middle	73.47	2.84	23.69	
Richer	70.24	3.06	26.7	
Richest	69.41	3.84	26.75	
Total	72.96	2.94	24.1	
Mass media exposure				
No exposure	79.62	2.31	18.07	385.0***
At least one exposure	71.17	3.29	25.54	
Total	73.85	2.98	23.17	
Place of residence				
Urban	70.82	2.98	26.2	103.3***
Rural	76.28	2.44	21.28	
Total	74.57	2.61	22.82	
Country				

Cameroon	75.46	0.59	23.96	545.5***
Chad	94.29	0.54	5.17	
Ghana	78.65	2.58	18.77	
Malawi	62.14	4.62	33.24	
Mali	91.51	0.89	7.6	
Rwanda	76.19	3.33	20.49	
Zambia	68.63	2.8	28.57	
Zimbabwe	56.48	4.12	39.4	
Total	74.57	2.61	22.82	
Total children ever born				
None	93.11	0.11	6.78	1682.1***
1-4 children	66.55	3.78	29.67	
5 and above	71.02	2.93	26.05	
Total	74.57	2.61	22.82	
Desire for more children				
Want another	78.79	1.84	19.37	1169.3***
No desire	67.76	3.86	28.37	
Total	74.58	2.61	22.81	

***p-value < 0.001

Table 2: Multinomial logistic regression showing the effect of socio-demographic characteristics on the use of contraceptives with 'not using any method' as the base outcome

	LARC	Model 1	Other methods	
haracteristics	**RRR**	**95% CI**	**RRR**	**95% CI**
Age				
15-24	1		1	
25-34	2.04	1.88-2.23***	1.51	1.45-1.57***
35+	1.47	1.33-1.63***	1.41	1.36-1.47***
Education				
No education	1		1	
Primary	2.15	1.92-2.40***	1.82	1.74-1.91***
Secondary	3.19	2.80-3.63***	2.42	2.29-2.57***
Higher	4.65	3.73-5.79***	3.03	2.70-3.41***
Marital status				
Never married	1		1	
Married/ living with partner	11.24	9.69-13.05***	6.38	6.01-6.77***
Widowed	2.72	2.13-3.48***	1.43	1.30-1.58***
Separated	6.83	5.61-8.31***	2.41	2.20-2.64***
Divorced	7.49	6.16-9.09***	2.68	2.45-2.93***
Occupation				
Unemployed	1		1	
Managerial	1.35	1.13-1.60**	1.16	1.06-1.27**
Clerical/ agric	1.25	1.13-1.37***	1.25	1.20-1.31***
Labour	1.42	1.30-1.55***	1.3	1.25-1.35***
Wealth Index				
Poorest	1		1	
Poorer	1.19	1.07-1.33**	1.14	1.09-1.19***
Middle	1.37	1.22-1.53***	1.16	1.10-1.22***
Richer	1.44	1.28-1.62***	1.3	1.24-1.37***
Richest	1.65	1.44-1.89***	1.23	1.16-1.31***
Mass media exposure				
No exposure	1		1	
At least one exposure	1.06	0.98-1.15	1.25	1.21-1.30***
Place of residence				
Urban	1		1	
Rural	0.85	0.76-0.96**	0.86	0.82-0.91***
Country				
Cameroon	1		1	
Chad	1.39	0.98-1.97	0.24	0.21-0.28***
Ghana	4.26	3.32-5.47***	0.69	0.63-0.76***
Malawi	13.36	10.78-16.54***	1.95	1.80-2.12***
Mali	2.86	2.17-3.77***	0.28	0.25-0.32***
Rwanda	8.77	7.08-10.87***	1.13	1.04-1.23**
Zambia	7.47	5.92-9.43***	1.48	1.36-1.62***
Zimbabwe	10.02	8.03-12.51***	2.31	2.12-2.51***

*p-value < 0.05; **p-value < 0.01; ***p-value < 0.001

Table 3: Multinomial logistic regression showing the effect of socio-demographic and fertility characteristics on the use of contraceptives with 'not using any method' as the base outcome

	Model 2			
	LARC		Other Methods	
Characteristics	**RRR**	**95% CI**	**RRR**	**95% CI**
Age				
15-24	1		1	
25-34	1.29	1.18-1.41***	1.08	1.04-1.12***
35+	0.72	0.64-0.80***	0.85	0.81-0.90***
Education				
No education	1		1	
Primary	2.2	1.97-2.46***	1.87	1.78-1.96***
Secondary	3.55	3.11-4.04***	2.65	2.50-2.81***
Higher	6.54	5.16-8.29***	3.93	3.46-4.48***
Marital status				
Never married	1		1	
Married/ living with partner	1.93	1.61-2.32***	2.16	2.02-2.30***
Widowed	0.44	0.34-0.58***	0.48	0.43-0.53***
Separated	1.15	0.93-1.43	0.82	0.75-0.91***
Divorced	1.25	1.00-1.55*	0.91	0.82-1.00
Occupation				
Unemployed	1		1	
Managerial	1.28	1.07-1.54**	1.12	1.02-1.24*
Clerical/ agric	1.2	1.09-1.32***	1.21	1.16-1.26***
Labour	1.35	1.24-1.48***	1.24	1.20-1.30***
Wealth Index				
Poorest	1		1	
Poorer	1.21	1.09-1.35***	1.15	1.10-1.21***
Middle	1.39	1.24-1.55***	1.18	1.12-1.24***
Richer	1.5	1.34-1.69***	1.36	1.29-1.43***
Richest	1.79	1.56-2.05***	1.33	1.25-1.41***
Mass media exposure				
No exposure	1		1	
At least one exposure	1.08	1.00-1.17*	1.27	1.22-1.31***
Place of residence				
Urban	1		1	
Rural	0.86	0.76-0.96	0.86	0.81-0.91***
Country				
Cameroon	1		1	
Chad	1.27	0.89-1.81	0.22	0.19-0.26***
Ghana	4.43	3.44-5.71***	0.71	0.64-0.79***
Malawi	12.42	9.98-15.46***	1.9	1.74-2.07***
Mali	2.92	2.21-3.86***	0.28	0.25-0.32***
Rwanda	8.76	7.04-10.89***	1.15	1.05-1.26**
Zambia	6.61	5.22-8.36***	1.35	1.23-1.47***

Zimbabwe	9.84	7.85-12.34***	2.34	2.15-2.55***
Total children ever born				
None	1		1	
1-4 children	41.14	23.63-71.62***	5.88	5.46-6.32***
5 and above	54.33	30.64-96.31***	7.87	7.24-8.54***
Desire for more children				
Want another	1		1	
No desire	1.41	1.31-1.52***	1.11	1.08-1.15***

*p-value < 0.05; **p-value < 0.01; ***p-value < 0.001