

Trends and Determinants of Contraceptive Method Choice among Women Aged 15-24 in Kenya

Authors: Kungu, Wambui, Agwada Alfred, Khasakhala, Anne

Abstract

Background

Studies show a gap in addressing the reproductive health goals of younger women whose inconsistent use of contraception is high in spite of their great need for it. The women aged 15-24 provides high potential for unintended pregnancy and increases the challenge for retention of users which is key in maintaining and pushing up the current gains in contraceptive prevalence rate (CPR).

Study Objectives

The focus of the study was to examine trends in contraceptive method choice for young women 15-24 years who were using modern methods and to determine factors associated with their choices.

Data and Methodology

The study used data from the KDHS of 2003, 2008/9 and 2014 in descriptive analysis and logistic regression to identify associations and determine the socio economic variables that influence the choice of contraceptive methods for young women.

Results

Results showed a general shift in use towards long term modern contraception methods with the shift being more pronounced among young women with primary education, from rural areas and from lower wealth households and low contraceptive use regions. Women with secondary education and higher wealth status are shifting towards short term methods.

Findings confirmed socio demographic factors of age, education, wealth status and type of region as predictors of contraceptive use among young girls.

Conclusion

Contraceptive information and services should be enhanced for young women to make informed choices concerning their reproductive and sexual health to enable them complete school and transition to colleges to acquire relevant skills that will make them optimally productive and lead Kenya to achieving the demographic dividend.

Introduction

Kenya has invested a lot towards improving adolescent sexual reproductive health (ASRH) and has in place the 2015 National Adolescent Sexual Reproductive Health Policy but the rates of teen age pregnancies do not reflect these heavy investments and are a matter of public health and social concern. Teenage pregnancy rates have plateaued for over a decade and have persisted at 20 percent between 2003 and 2014 (KNBS 2015; 2004; MoH 2015). The ideal position for adolescents is to postpone sexual activity until they are more mature but that has proved to be easier said than done.

More than 10,000 Kenyan girls quit school every year due to unintended pregnancies and more than 10 percent of births in Kenya occur to girls aged 15–19 years. Unintended pregnancies among teenagers are linked to poor health outcomes which include sexually transmitted infections, unsafe abortion, miscarriages, stillbirths and complications during births that can lead to infant and/or maternal deaths. There is also the phenomenon of rapid repeat pregnancy which is linked to greater risks of morbidity and mortality in mothers and new-borns. Other adverse effects could be poor mental and general health (Norton, et al, 2017; Obare et al, 2011).

Most sexually active 15-19 year olds do not use contraception and only about 50 percent of those on contraception use it consistently. A good percentage (14%) of these adolescents are ambivalent about pregnancy and this tends to make them not to use contraceptives (Brückner et al, 2004). In Kenya, 90 percent of the unmarried sexually active adolescent girls reported not wanting to get pregnant in the next two years but only 43 percent were using a method to prevent pregnancy (KNBS, 2015). Average unmet need for family planning for the group is 21 percent against the national average of 18 percent.

The KDHS 2014 revealed critical facts about adolescents in Kenya. 30 percent of adolescent girls reported having had sex while the average age at which adolescent girls got their first child was 17 years. Nationally, about 12 percent of the girls were already in a relationship (KNBS, 2015). Several interventions to address ASRH needs have been put in place in Kenya (MoH, 2013) but teenage mothers continue to get younger and younger.

Demographic dividend has been proposed as a viable solution to economic challenges faced by developing countries like Kenya. It refers to the faster economic development possible for

a country to achieve by slowing down the rate of population growth while making strategic investments in the education, health, governance and economic sectors. Kenya's demographic window is expected to open in 2038 and Kenya could achieve demographic dividend by 2050 if it invests in the huge youth population and especially the adolescents (AFIDEP, 2018; NCPD, 2017; HPP, 2014).

Demographic dividend modelling shows that Kenya will likely attain a whopping \$4,595 in GDP per capita by 2050 if it makes needed strategic investments as opposed to \$896 if it maintains the status quo. This would mean a staggering 5 fold economic growth, an opportunity Kenya should embrace (HPP, 2014). Family Planning can accelerate achievement of the demographic dividend (Izugbara et al, 2018; Castle and Askew, 2015).

Also, improved access to reproductive health has been identified as critical in the process of development since the International Conference on Population and Development (ICPD) of 1994 and in Sustainable Development Goal (SDG) 3.7 (New et al, 2017). Adolescent and young women childbearing has been linked with lower educational achievement in the young mothers and could lead to a cycle of poverty, hinder achievement of demographic dividend. Meeting the contraception needs of adolescent and youth to prevent unintended pregnancies should be a priority (Guttmacher, 2018).

Contraceptive method choice is the process through which individuals start using a specific method (Khraif et al, 2017). Women using modern contraceptive methods are associated with less fertility on average compared to those who use other contraceptive methods. Choosing a method involves various considerations which also influence a woman's motivation to continue contraception hence the choice of explanatory variables of education, place of residence, type of region and wealth status (Bbaale and Mpuga, 2011).

The policy environment is ripe for scaling up contraceptive use for adolescents and youth globally and in Kenya. The Health Act of 2017 as well as the constitution of Kenya have enshrined the right of every woman to safe, affordable, effective, and acceptable contraception services (GoK, 2017). The ICPD 1994, proposed measures for advancing the reproductive health and rights of young women and reviews on the achievements (after 25 years) indicate a lot of ground remains to be covered. FP2020 has issued the Global Consensus Statement to expand contraceptive options for adolescents and youth and set new

targets for family planning. There is in Kenya, a National Adolescent Sexual and Reproductive Health Policy, 2015, Family Planning Guidelines and Costed Implementation Plans (CIPs) among many policy documents (FP2020, 2015; MoH, 2017; 2016; 2015). Running across in these documents is the promotion of long acting reversible contraception (implants and IUD) as the safe, convenient and highly effective methods.

Globally in 2015, 90 percent of contraceptive use was constituted by modern methods (UN, 2015) hence the focus of this study on modern methods only.

Study objectives

The main objective of the study was to examine factors that influence the choice of contraceptive methods for young women 15 to 24 years old. It had the following specific objectives; to establish the profiles of 15-24 year old modern contraceptive users, to examine the trends in contraceptive method choice for young women, 15-24 and to identify determinants of contraceptive choice among this group.

The Situation

Further analysis of KDHS data shows the 15-24 age group taking a sizeable share of the modern method mix in Kenya among all users of reproductive age with 15 percent pill users, 8 percent of IUD use, 18 percent implants use and 24 percent injection use (KNBS, 2015). It also shows shifting popularity from injections to implants for the young women but correct and consistent use remains a challenge and the rates of unintended pregnancies cause great concern (Obare, et al, 2011). Young women have unique sexual and reproductive health issues and need to be empowered to control their fertility. Data is constantly needed to monitor the success of the many policy and program efforts towards effective reproductive health programs for youth (KNBS, 2015; 2010).

Studies on contraceptive use dynamics can identify concerns and gaps in service provision (Mumah et al, 2014). The proportion of unmarried and sexually active non-users aged 15-24 in Kenya has been increasing but the target of the family planning programs in Kenya are older women. A gap exists in addressing the reproductive health goals of younger women whose inconsistent use and discontinuation is high. This provides high potential for unintended pregnancy and increases the challenge for retention of users and achievement of demographic dividend (NCPD, 2013; Magadi et al, 2001). It is important to understand why

young girls are not using contraception despite not wanting to get pregnant so that RH programs can address their needs.

Previous studies in Kenya have identified socio economic factors such as education and wealth as significant on the use of contraception (Kimani et al, 2013; Magadi and Curtis, 2003). This study attempted to provide a current information base on how contraceptive use among 15-24 years old girls in Kenya has evolved from 2003 to 2014 with a view to providing evidence which could form a basis to increase modern contraceptive use among them.

Literature Review

Kenya has a very youthful population with the 15-24 age cohort constituting about 30 percent of the population of 47 million (NCPD, 2018). The 15 to 24 year old young women take about 15 percent which comes to about 7 million, a huge population segment by all means. With the economic growth far below the desired 10% per annum, this group is critical to economic development but for them to be substantially productive the problems surrounding them have to be comprehensively addressed (NCPD, 2015).

KDHS 2014 generated new evidence on significant progress made in important FP indicators such as increased CPR pushed up by modern methods, declining Total Fertility Rate (TFR) and unmet need for contraception. The data revealed huge differentials in CPR in counties with 22 counties over the national average of 58 percent. Two counties have CPR of more than 80 percent each while another two have very low CPR of 2 percent each. This presents opportunities for Kenya to increase CPR by targeting the low CPR Counties (KNBS, 2015).

Teenage pregnancy has adverse effects on the health, education and career prospects of teenage girls. It is the major reason girls drop out of school and get married very young. Poverty is a major contributing factor with girls from poor households more exposed to the risk of early childbearing (NCPD, 2015). Younger women who are more prone to health complications and increased risks of death from early pregnancies and childbearing are assisted by contraception to avoid or delay pregnancies thereby reducing the risks of maternal mortality (Guttmacher, 2018; WHO, 2017). Unfortunately, in Kenya there is extremely low use of contraception in spite of increasing sexual activity at early ages. Evidence has shown

that without contraception, more than 90 percent sexually active young women get pregnant within a year (Temple-Smith and Sancu, 2017; WHO, 2017; Obare et al, 2011).

The leading reason that may make adolescents delay or not obtain contraceptive services is apprehension on confidentiality and side effects. Negative health issues associated with some methods of contraception for adolescents are irregular menstrual cycles, acne, bloating, headaches and weight gain (American Academy of Paediatrics, 2007).

In Kenya, 22 percent of unintended pregnancies end up in dangerous abortions for adolescents because they mostly abort during the second trimester after late discoveries of the pregnancies. Adolescents below 19 years make 20 percent of women seeking post abortion services in health facilities and 50 percent admissions from severe complications (Guttmacher, 2016; Sedgh et al, 2015). Some of the adverse health effects from unsafe abortions are post-abortion sepsis, hypertension, haemorrhage and infertility. There is urgent need to expand access to safe and affordable reproductive health care and options especially for the more vulnerable young women of lower education and economic status who procure unsafe abortions more (KHRC and RHRA, 2010).

Evidence has shown increased use of contraception is a primary factor in reduction of adolescent fertility and births rates (Lindberg et al, 2016). Comprehensive sexuality education (CSE) and integrated youth friendly services have also shown success when well implemented but youth centres and peer education have not been effective. (Chandra- Mouli et al, 2017). Providing contraceptive information, counselling and services and the use of LARCS has been found useful to encourage new acceptors of contraception among nulliparous young women. LARCs are 99 percent effective if correctly used and have several non-contraceptive benefits. One of their benefits is reducing menstrual flow and pain and thus endometriosis. They can also raise haemoglobin levels and thereby reduce anaemia which ails many young women in low resource countries (Yinger, 2016).

To achieve demographic dividend, a country must undergo a demographic transition which brings about lower birth and death rates through investments in family planning. Significant declines in fertility can be reaped from a high contraceptive use momentum that young women can generate. A slower population growth can also be achieved if age at first birth is

delayed for most of these women. A huge young population represents great economic potential and investments in their health and education can stimulate new economic opportunities (Gribble and Bremner, 2012).

Demographic dividend windows will not open at the same time for counties in Kenya as they are at different levels of fertility and mortality transition. Some counties with high contraceptive use like Kirinyaga have already achieved a demographic transition and have their windows open. Counties still experiencing high fertility and mortality levels will achieve demographic transition later and so their windows will open much later. Extra efforts are needed to increase effective contraceptive use among the huge youth population to fast track achievement of the demographic transition. Correct use of contraception is vital to protect their health and that of the children they will bear (NCPD, 2017).

Majority of 15 to 24 year olds women are not married, have none or very few children hence are mostly delaying/spacing children but not limiting. The study therefore focused on socio demographic factors of age, education, residence, wealth status and region which are universally applicable to the group.

Methodology

Data Sources

The study was national in scope and analysed secondary data from the Kenya Demographic and Health Surveys of 2003, 2008/9 and 2014 which contained a detailed contraceptive calendar for all women of reproductive age who were interviewed. In 2003, there were 3530 young women aged 15-24 years who were interviewed and 374 were selected for this study as they were using the modern methods of interest to the study. In 2008/09, the 15-24 age group had 3511 young women interviewed and 484 qualified for the selection on the basis of their using a modern method. In 2014, out of 11,483 young women interviewed, 2730 of them reported using one of the main modern methods of contraception and were included in the study.

The study was based on the samples of all 15 to 24 year old women whether married or single who reported current use of modern contraception within the five years prior to the surveys in three KDHS cycles. It excluded those who were not using a main modern contraceptive at the time of the each KDHS.

Data Analysis

For preliminary analysis, the study started with a trend analysis of the main methods of contraception used by the young women namely; Pill, IUD, Implants, Injection and Condoms for the three data sets. Afterwards, young women contraceptive users were profiled using cross-classification analysis on socio demographic variables of age, education, wealth status, place of residence and type of region to provide a descriptive analysis on the trends of contraceptive method choice among the group within the period covered by the study. Chi square test was used to determine if significant relationships existed between the dependent variable, contraceptive method choice and the independent socio demographic variables.

The dependent variable in the study (contraceptive method choice) was dichotomous hence logistic regression was used to determine the net effects of the set of independent variables (age, education, wealth status and type and region of residence) on method choice.

Contraceptive method was recoded into two categories as short term (pills, condoms) and long term (injection, IUD, implants). Two age categories of 15-19 and 20-24 were selected while level of education was recoded into two categories of primary and secondary/higher. Household wealth status was recoded into three tertiles of lower (lowest, and second lowest), middle (middle) and higher (fourth quintile and highest) while region was recoded into two categories of high contraceptive use comprising Nairobi, Central and Eastern while lower contraceptive use carried the rest of the regions.

SPSS was used to analyse the data.

Results and Discussion

Background Characteristics of the Study population

The first objective of the study was ‘To establish the profiles of 15-24 year old modern contraceptive users’ over the years 2003 to 2014.

The following table presents the background characteristics of the study population of young women 15-24 who reported using a main modern method of contraceptive in each KDHS under study.

Table 1 Background Characteristics of the 15-24 Young Women using modern methods of contraception for 2003 to 2014

| VARIABLE | 2003 | 2008/09 | 2014 |
|---------------------|--------------------|----------------|-------------|
| No. of cases | 374 | 484 | 2730 |
| | Percent (%) | | |
| Age | | | |
| 15-19 | 24 | 17.8 | 19.6 |

| | | | |
|----------------------|------|------|------|
| 20-24 | 76 | 82.2 | 80.4 |
| Education | | | |
| Primary | 67.8 | 62.3 | 50.8 |
| Sec + | 32.2 | 37.7 | 49.2 |
| Residence | | | |
| Rural | 63.1 | 62.8 | 51.2 |
| Urban | 36.9 | 37.2 | 48.8 |
| Wealth Status | | | |
| Lower | 19.9 | 23.4 | 29.9 |
| Middle | 18.3 | 16.7 | 20.9 |
| Higher | 61.8 | 60 | 49.1 |
| Region | | | |
| Low Contraceptive | 56.3 | 54.6 | 58 |
| High Contraceptive | 43.7 | 45.4 | 42 |
| Method Used | | | |
| Short term | 39.5 | 40 | 26.6 |
| Long term | 60.5 | 60 | 73.4 |

The majority of the study group are seen to be in the 20-24 age group at 76 percent in 2003 which increases to over 80 percent in 2008/09 and 2014. Results show the group starting off in 2003 with 68 percent having primary education but this reduces to 51 percent by 2014 as the proportions with secondary education improve from 32 percent in 2003 to reach 49 percent in 2014. The trend seen is that of rising education levels among the group.

The majority (63 percent) were living in rural areas between 2003 and 2008/09 but the figure drops to 51 percent in 2014. Urban areas accommodated 37 percent of the group in 2003 and 2008/09 and by 2014 took a share of 49 percent.

On the household wealth status in 2003 and 2008/09, 20 percent were in the lower wealth category, 18 percent in middle category and 60 percent in higher category. In 2014, higher category reduced to 49 percent, middle wealth households increased to 21 percent and the lower wealth group increased to 30 percent. The emerging trend is of deteriorating wealth status among the group. In terms of type of region, those from regions of low contraceptive use were the majority at 55- 58 percent while regions of high contraceptive use had 42-45 percent share.

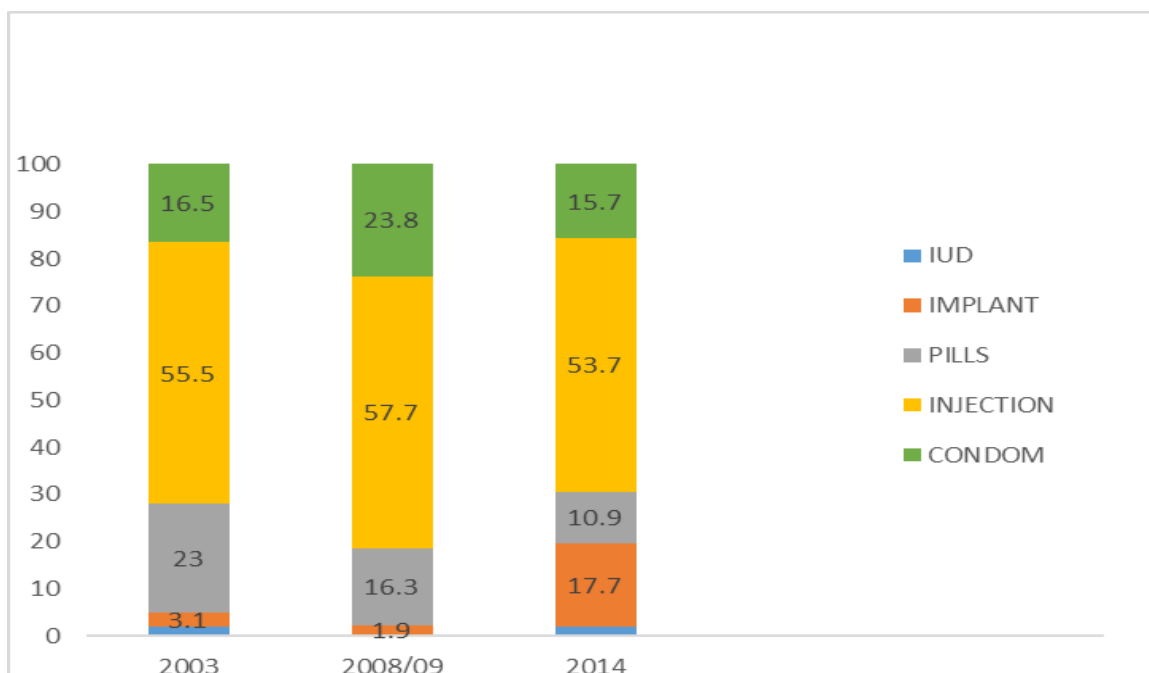
On the method of contraception, majority reported using long term methods at 60 percent in 2003 and 2008/09 which increased to 76 percent in 2014 while use of short term methods dropped from 40 to 27 percent in the same period.

The general profile of the modern contraceptive users among young women aged 15 to 24 is that of women with at primary education, living in urban areas, from higher wealth households and from regions of low contraceptive use.

Trends in Contraceptive Method Choice

The section addresses the second objective of the study, to establish the trends in contraceptive method choice for young women, 15-24 in Kenya from 2003 to 2014. An analysis was done to establish the share of use of each of the following methods; Pill, Condom, Injection, IUD and Implants. The following figure shows the method share.

Figure 1 Trends in Contraceptive Method Choice in Percentage for Women Aged 15-24, 2003-2014



Source: Further Analysis of KDHS Data

Results show the main method of contraception was the injection with a share of 54-58 percent in the three data sets. Its share increased slightly between 2003 and 2008/09 from about 56 percent to about 58 percent then reduced to 54 percent in 2014. The pill held second position in 2003 at 23 percent but its share declined by 7 percentage points in 2008 and by 6 percentage points in 2014 to take third position behind the condom.

Condom use was increased from 17 percent in 2003 to the second largest share in 2008/09 at 24 percent then fell to third position in 2014 after being overtaken by the implants. Implants were initially fourth in usage between 2003 and 2008/09 with a declining 3 percent share. However, between 2008/09 and 2014, the share had a huge upsurge of 16 percentage points to move to second position after injection. The IUD had a very low share of 2 percent and below with its lowest share being 0.4 percent in 2008/09.

Differentials of Contraceptive Method Choice

For further analysis, the contraceptive methods were grouped into Short term (pill, condom) and Long term (Injection, IUD, Implants) and the influence of each of the background characteristics on the choice of the current method is shown in the subsequent table.

Table 2 Differentials of Contraceptive Method Choice by Various Background Characteristics 2003 to 2014

| Variable | 2003 | | 2008/09 | | 2014 | |
|----------------------|--|-----------|--|-----------|---|-----------|
| | Short term | Long term | Short term | Long term | Short term | Long term |
| N | 374 | | 484 | | 2730 | |
| | Percent (%) | | | | | |
| Age | | | | | | |
| 15-19 | 54.4 | 45.6 | 52.9 | 47.1 | 33.1 | 66.9 |
| 20-24 | 34.9 | 65.1 | 37.2 | 62.8 | 25 | 75 |
| | X²= 10.963 df=1 Sig = .001 | | X²= 7.321 df=1 Sig = .007 | | X²= 14.426 df=1 Sig = .000 | |
| Education | | | | | | |
| Pry | 36 | 64 | 30.5 | 69.5 | 16.8 | 83.2 |
| Sec+ | 46.7 | 53.3 | 56 | 44 | 36.7 | 63.3 |
| | X²= 3.901 df=1 Sig = .048 | | X²= 30.941 df=1 Sig = .000 | | X²= 138.305 df=1 Sig = .000 | |
| Residence | | | | | | |
| Rural | 37.3 | 62.7 | 38.5 | 61.5 | 19.8 | 80.2 |
| Urban | 43.1 | 56.9 | 42.8 | 57.2 | 33.7 | 66.3 |
| | X²= 1.212 df=1 Sig = .271 | | X²= .867 df=1 Sig = .352 | | X²= 67.282 df=1 Sig = .000 | |
| Wealth Status | | | | | | |
| Lower | 41.9 | 58.1 | 33.6 | 66.4 | 16.2 | 83.8 |
| Middle | 30.9 | 69.1 | 38.3 | 61.7 | 21.7 | 78.3 |
| Higher | 41.3 | 58.7 | 43.1 | 56.9 | 35 | 65 |
| | X²=2.603 df=2 Sig = .272 | | X²=3.173 df=2 Sig = .205 | | X²= 101.386 df=2 Sig = .000 | |
| Region | | | | | | |
| Low Contraceptive | 38.6 | 61.4 | 50.6 | 49.4 | 21.1 | 78.9 |
| High Contraceptive | 40.9 | 59.1 | 27.4 | 72.6 | 34.3 | 65.7 |
| | X²= .201 df=1 Sig = .654 | | X²= 26.800 df=1 Sig = .000 | | X²=59.363 df=1 Sig = .000 | |

Notes: $\alpha = 0.05$

Source: Further Analysis of KDHS Data

Age and Method Choice

Age exhibited a significant relationship with method choice in all the years under study but more so in 2014. Majority of 15-19 year old girls were using short term methods in 2003 and 2008 but this changed in 2014 with 67 percent of them using long term methods. The group shows a sustained reduction in use of short term methods. The 20-24 women were mostly on long term methods at 63-65 percent in 2003 and 2008/09 with the share increasing to 75 percent in 2014.

Education and Method Choice

Education showed some significant association with method choice in 2003 and more significance in 2008/09 and 2014. Majority of women with primary education were on long term methods with proportions rising from 64 percent in 2003 to 70 percent in 2008/09 and to an overwhelming 83 percent in 2014. The proportion on long term methods was more than 4 times those on short term methods.

Majority of those with secondary education were using long term methods at 53 percent in 2003 but in 2008/09 this figure reduces to 44 percent with 56 percent using short term methods. The pattern changes in 2014 with 63 percent of them being on long term methods. This shows an increasing trend most seen between 2008/09 and 2014 for long term methods.

For women with secondary education, use of long term methods is characterised by inconsistency. In general from the results on education and method choice, women with primary education no doubt, take the largest share of long term methods.

Residence and Method Choice

Residence was not significantly associated with choice of a modern method in 2003 and 2008/09 but had a significant relationship in 2014. Majority of users in both urban and rural areas are using long term methods but the share is bigger in rural areas. Use of long term methods in urban areas was 57 percent in 2003 and 2008/09 then increased to 66 percent in 2014.

Use of long term methods in rural areas was 62 percent in 2003 and 2008, then surged upwards to 80 percent in 2014. The changing pattern was reflected in the use of short term methods which stood at 39 percent in 2008/09 but fell by 50 percent to 20 percent in 2014.

Wealth and Method Choice

Wealth status had no significant association with choice of method in 2003 and 2008/09 but had a strong association in 2014. Use of short term methods among women of lower wealth status shows a gradual decline from 42 percent in 2003 to 34 percent in 2008/09 then a major decline by 18 percentage points to 16 percent in 2014. For women from middle wealth status, share of use is 31 percent in 2003, rises to 38 percent in 2008/09 and thereafter falls to 22 percent. In women of higher wealth status, the share of short term methods is 41 percent in 2003, 43 percent in 2008/09 and then declines to 35 percent in 2014.

Use of long term methods among young women from the lower category of wealth showed a consistent rise from 58 percent in 2003 to 66 percent in 2008/09 then to 84 percent in 2014. For women in the middle wealth category, the share was 69 percent in 2003, it declined to 62 percent in 2008/09 and finally increased to 78 percent in 2014. In the higher wealth category, the shares were 58 percent in 2003, 57 percent in 2008/09 and 65 percent in 2014. Thus there was a marginal decline in use of long term methods in both the middle and higher wealth categories between 2003 and 2008/09.

Overall, use of long term methods was highest among women in the middle wealth category in 2003 but in 2008/09 and 2014, women in the lower wealth status became the majority users of long term methods.

Region and Method Choice

There was no association seen between region and method choice in 2003, but a relationship emerged in 2008/09 and 2014. Women from regions of high contraceptive use show a major decline in share of use for short term methods from 41 percent in 2003 to 27 percent in 2008/09 then a rise to 34 percent in 2014. For those in regions of lower contraception, use of short term methods had an inconsistent pattern at 39 percent in 2003 then recorded a rise in 2008/09 to 51 percent followed by a decline to 21 percent in 2014. Thus use of short term methods was highest among women from regions of higher contraceptive use in 2014.

In use of long term methods, regions of high contraceptive use move from a share of 59 percent in 2003, rising to 73 percent in 2008/09 then reducing to 66 percent in 2014. In regions of lower contraceptive use, the share was 61 percent in 2003, it declined to 49 percent in 2008/09 and from there it was a major upsurge of 30 percentage points to reach a high of 79 percent in 2014. Use of long term methods is high in both regions but higher in regions of lower contraceptive use.

On the profile of modern contraceptive users, majority of users of long term methods had primary education, living in rural areas and in regions of lower contraceptive use. On their wealth status, majority were in the middle category in 2003 but in 2008/09 and 2014, bigger proportions were clearly in the lower wealth bracket. On the other hand, users of short term methods had secondary education, were from wealthy households and living in urban areas mostly in regions of high contraceptive use.

Logistic Regression Results

The next stage of analysis was logistic regression and the results are presented in the following table. They respond to the third objective of the study, to identify determinants of contraceptive choice among 15-24 year olds.

Six variables were fitted into the regression model namely; current method of contraception (dependent variable) with short term method as the reference category and independent variables of age, education, place of residence, wealth status and type of region.

Table 3 Logistic Regression Results of Contraceptive Method choice in Kenya 2003-2014 for 15-24 Women

| Variable | 2003 | | | 2008/09 | | | 2014 | | |
|----------------------------|------------|------|--------------|------------|------|--------------|-------------|------|----------|
| | B | SE | EXP B | B | SE | EXP B | B | SE | EXP B |
| N | 374 | | | 484 | | | 2730 | | |
| Age | | | | | | | | | |
| 15-19 (ref) | .000 | | 1.000 | .000 | | 1.000 | .000 | | 1.000 |
| 20-24 | .918 | .255 | 2.503* ** | .677 | .255 | 1.967* | .569 | .111 | 1.766*** |
| Education | | | | | | | | | |
| Pry (ref) | .000 | | 1.000 | .000 | | 1.000 | .000 | | 1.000 |
| Sec+ | -.519 | .240 | .595* * | -1.130 | .215 | .323** * | -.880 | .097 | .415*** |
| Residence | | | | | | | | | |
| Rural (ref) | .000 | | 1.000 | .000 | | 1.000 | .000 | | 1.000 |
| Urban | -.038 | .270 | .963 | -.082 | .257 | .921 | -.204 | .113 | .816 |
| Wealth | | | | | | | | | |
| Lower (ref) | .000 | | 1.000 | .000 | | 1.000 | .000 | | 1.000 |
| Middle | .387 | .362 | 1.472 | -.023 | .328 | .977 | -.105 | .144 | .900 |
| Higher | -.025 | .315 | .975 | .061 | .302 | 1.063 | -.505 | .136 | .604*** |
| Region | | | | | | | | | |
| Low (ref) Contraceptive | .000 | | 1.000 | .000 | | 1.000 | .000 | | 1.000 |
| High Contraceptive | -.136 | .222 | .873 | 1.003 | .204 | 2.727* ** | -.436 | .095 | .647*** |
| Model | | | | | | | | | |

| | | | |
|---------------------------|---------|---------|----------|
| -2 Log Likelihood π^2 | 481.886 | 587.280 | 2921.715 |
| Model X ² | 19.440 | 64.761 | 241.648 |

Notes: $\alpha = 0.05$ <.05* <.005** <.001 *** ref = Reference Category

Source: Further Analysis of KDHS Data

Results show that two socio economic variables namely age and education were as expected, significantly associated with the choice of a modern method and specifically long term method over short term method in the 2003 data set. Age emerged as positively significant with the odds of choosing a long term method for a 20-24 woman being two and a half times greater compared with a similar choice for a 15-19 woman. Education showed negative significance with findings indicating a 40 percent decrease in the odds of a woman with secondary education choosing a long term method when compared against a woman with primary education. Women with secondary education were therefore 60 percent more likely to choose short term methods than those with primary education.

In 2008/09, Age, Education and Region were found to be significant in the choice of a method with education and region having very strong significance while age only had some significance. Age and region had strong positive associations while education continued to exhibit a negative relationship as a predictor of choice of a modern method of contraception.

For age, there was an almost 100 percent increase in the odds of a 20-24 woman choosing a long term method when compared with a 15-19 old woman. However, there was a great decrease in the odds of using a long term method with a rise in the level of education. Young women with secondary education were 70 percent less likely to choose long term methods relative to those with primary education suggesting an inverse relationship between education and use of modern contraceptives. The results for region showed the odds of a woman from a region of high contraceptive use choosing a long term method to be almost three times greater than those of a woman from a region of low contraceptive use.

In 2014, four variables, age, education, wealth status and region emerged as very significant predictors of contraceptive method choice. Age still had a positive association while education, region and wealth status brought out negative relationships. On age, 20-24 year old women had almost double odds of choosing a long term method when compared with their 15-19 younger cohorts. Education showed a 60 percent decrease in the odds of a woman

with at least secondary education choosing a long term method relative to a woman with primary education. Thus women with secondary education were more likely to choose short term methods than their less educated counter parts.

Results for 2014 showed region had a negative relationship with method choice in contrast to 2008/09 and emerged as a very significant explanatory variable influencing method choice. There was a 35 percent decrease in the odds of a woman from a region of high contraceptive use choosing a long term method when compared with a woman from a region of low contraceptive use. Women from regions of high contraceptive use were thus 65 percent more likely to choose short term methods relative to women from regions of lower contraceptive use. Thus women from regions of high contraceptive use were more inclined to using short term methods of contraception. The odds of choosing a long term method were therefore higher in regions of lower contraceptive use.

Wealth status showed negative influence on the choice of method in that those from households of higher wealth status were less likely to use long term methods of contraception than those of lower wealth status. Results suggest that the odds of choosing a long term method decreased with increased house hold wealth. Young women from households of higher wealth emerged as 40 percent less likely to choose a long term method of contraception as compared to those from lower wealth status. Women from the higher wealth category were shown as 60 percent more likely to choose short term methods than women from the lower category.

There was no notable influence on the choice of a modern method for either urban or rural residence in the regression analysis in all the data sets suggesting residence could not be used to significantly explain urban- rural variations in contraceptive method choice.

Overall in the regression analysis, age, education, wealth status and type of region emerged as being significant predictors of contraceptive method choice.

Discussion

The study has shown use of modern method among 15-24 year old women has been increasing from 2003 but more so from 2008/09. Proportions using modern methods have increased almost six fold between 2008 and 2014. Use of modern methods has been increasing globally and in Kenya in recent years for all women of reproductive age but more so among 15-24 where there are huge numbers of sexually active youth who are initiating contraception. The findings are collaborated by the annual FP2020 reports for Kenya

(FP2020, 2015). Other studies that reported rising use of modern methods and more so injectables earlier were (Obare et al, 2011; Harbison and Adetunji, 2009; Magadi and Curtis, 2003).

Use of long term methods leaped ahead by about four times between 2008/09 and 2014. This is not only a Kenyan phenomenon but a general trend in Sub-Saharan Africa where successful LARC promotion campaigns and innovative youth SRH programs are driving the numbers in new acceptors. Implants are now the fastest rising method of contraception among young women 15-24 and their use doubled between 2008/09 from 10 to 21 percent in 2014. Rapid increase in use of implants has been reported recently for several countries including Kenya where scale up campaigns have been conducted (Ross et al, 2015; Keyonzo et al, 2015). LARCs are more effective and cheaper in the long term than shorter acting contraceptives (SACs), and are recommended for most women and lately so adolescents and nulliparous women (Tsui et al, 2017).

The shift away from short term methods heralded declining use of pills and condoms as shown in figure 1(trend analysis) and in latter analysis as declining use of short term methods which were previously very popular with young women. Condoms are an important dual contraceptive method for prevention against pregnancy and also sexually transmitted infections/HIV/AIDS. They have been previously marketed aggressively to ensure demand creation but shifting priorities of HIV funding have led to fewer campaigns from 2007 which has probably led to their declining use (Mann Global Health, 2017).

As shown in the trend analysis for individual modern methods, implants are the new contraception frontier for young women 15-24. Other studies have shown implants as increasing their acceptance among young women as efforts to promote them increase. A study in Kenya to promote LARCS among young women showed a major upsurge in the use of implants between 2008 and 2014 with use doubling in the 15-19 age category and increasing 6 times among the 20 to 24 year group (Hubacher et al, 2012).

Results on the socio economic variables show marked changes over the study period. Regions of lower contraceptive use have turned the tables on regions of high contraception and become the uncharted paths for major increases in use of modern contraceptives for the 15 to 24 year old women and it is collaborated by FP2020 progress reports. This presents evidence of potential for scaling up mCPR and achieving the FP2020 targets (FP2020, 2015).

Type of region in terms of contraceptive use has claimed a place among socio-economic predictors of contraceptive method choice in this study from 2008/09 and going forward to 2014. However, the classification of regions in terms of contraceptive use as used here has been changing as seen from KDHS 2014 such that regions hitherto having lower contraceptive uptake like Western are recording very high uptake of modern contraception especially for LARCs. This is possibly an outcome of high level campaigns to promote long term methods in the whole country but more so in the regions of lower contraceptive use.

On residence, no distinct variations in method choice are seen in terms of rural and urban areas suggesting good progress towards equity in accessing methods in both types of residence. Previous studies in Kenya had revealed distinct regional differentials showing the likelihood of using a modern method, more so long-term ones, being higher in urban than rural areas and also higher in regions of high contraceptive use than in regions of lower contraceptive use (Magadi and Curtis, 2003). In another study in Kenya, residence was also found to influence variations in contraceptive choice (Obare et al, 2011).

The findings on the significance of education and wealth status are in line with earlier studies in Kenya that found education and wealth had significant influence on the use of contraception (Kimani et al, 2013; Magadi and Curtis, 2003). A study in Uganda found similar results (Bbaale and Mpuga, 2011). In contrast, other studies on Kenya have not found education and household wealth to be significantly associated to contraceptive use (Fotso et al, 2014; Larson and Stanfors, 2014).

Results have shown that users of modern methods are exhibiting higher education levels in recent years. This is probably a reflection of the heavy investments in education Kenya is making towards 100 percent transition to secondary school and also the free primary and secondary education (MoEST, 2015). However, the regression results on education showed an inverse relationship between education and choice of long term contraceptive methods in all the data sets. Young women with secondary education were found to be 40 to 70 percent less likely to choose a long term method of contraception than those with primary education. The results tally with surprising recent findings in Ghana that women with secondary education were using less effective, short term and periodic contraception more than effective, long term, modern methods (Marston et al, 2017; Larson and Stanfors, 2014).

An interesting finding is that more modern users were in the lower wealth brackets in 2008/09 and 2014 and users of long term methods were more in rural areas. This could imply success of family planning campaigns in rural and low income areas and also improved access for women of lower wealth status. Community health workers whose role in expanding contraceptive access has been revitalized also work in some of these rural and hard to reach areas where most households are in lower wealth categories (MoPHS, 2010).

As observed in the study results, 15 to 24 year old young women, modern method users are shifting away from short term contraceptives towards long term methods/LARCs which are more efficient, convenient and offer greater user satisfaction. The shift is more pronounced among young women with primary education, from rural areas, lower wealth households and low contraceptive use regions. Implants may overtake the injection as the most popular method for this group if the surge in popularity continues.

The results of this study generally indicate success for the aggressive Kenyan family planning program and FP2020 campaigns and existence of great potential for scaling up use of long term modern contraceptive methods among the study group.

Program and Policy Issues

Some program and policy issues with implications arise from the study findings. Young women are shifting towards long term methods and more so implants. These are provider dependent methods and therefore the government needs to invest a lot more in ensuring providers are skilled to handle insertions and removal as well as counselling on any associated side effects. It is expected the methods because of being long term, will reduce discontinuations and consequently unintended pregnancies among the young women

The shift towards long term methods spells success for the policy on promotion of LARCs for all women, including adolescent women. This should impact on retention of users of modern methods, protect the gains made in CPR and mCPR and contribute towards further reductions in fertility. The cost of LARCS is more initially although cost effective in the long term and this calls for more funding towards sustainable commodity stocks.

The changing profile of the long term method users mostly living in rural and low income areas show potential for increased contraception and call for stepping up the campaigns for LARCS in rural and low income areas.

Conclusions and recommendation

Conclusions

Results from the study have provided a useful profile of young modern contraceptive users and established a general pattern of their contraceptive use. The study has identified the predictors of contraceptive use among young girls as age, education, household wealth and type of region and how these factors are changing with time. This information will be useful for managers of youth reproductive health programs and could guide the interventions to help reduce unintended pregnancies among young girls in Kenya so that the girls can stay in school longer and complete their education to desired levels.

The results for the young women 15-24 years conform to the general shift towards long term methods for all women of reproductive age seen in the recent KDHS reports. The phenomenal rise in use of long term modern methods observed for the young women in the review period will most likely continue due to the ongoing global and local promotion towards LARCs.

Kenya is a thriving story of family planning success but the journey towards replacement level fertility cannot be complete if the 15-24 group is left behind. More investments towards successful adolescent and youth reproductive health need to be in place to ensure Kenya takes advantage of the opening of the demographic window and can reap the demographic dividend. Young women, 15-24 are at the centre of these efforts and policy and family planning program managers must ensure they take control of their reproductive health and use contraceptive information and services to their advantage.

Contraception will allow the young women to make informed choices concerning their reproductive and sexual health, stay in school longer, complete higher levels of education and transition to colleges to acquire labour relevant skills that will enable them contribute to the economy of the country optimally and lead Kenya to achieving the much desired demographic dividend. Long acting reversible contraception (LARC) bears potential advantage for these women to delay pregnancy for several years.

Recommendations

Several recommendations can be made to improve the environment for reproductive health and modern contraceptive use for young women 15 to 24 years with a view to minimising unintended pregnancies guided by results of this study; 1). Implement fully the National Adolescent Sexual and Reproductive Health Policy, 2015. 2). Initiate age appropriate

Comprehensive Sexuality Education (CSE) in all schools. 3). Mainstream youth friendly services into regular services at all health facilities. 4). Expand the range of available method mix for married and unmarried young women and especially the LARCs. 5). Ensure commodity security by reducing stock outs of commodities.

Limitations and Areas for further Research

Scope and Limitations of the Study

The study included all young women between 15-24 years who reported current use of contraception in the KDHS surveys of 2003, 2008/09 and 2014. The study focused on reversible methods and therefore sterilization was not included in the survey as it is not a common method for this age group. The focus was young women who are just entering into the reproductive age group and are using contraception mostly for delaying childbearing. The modern methods analysed in the study were only the major ones of pill, condoms, injection, IUD and implants. The study had a minor limitation from the small sample sizes in 2003 and 2008/09 especially for the 15-19 year old but the sample size increased considerably in 2014.

Areas for further research

From the findings, there are areas that need further research to understand better the dynamics of contraceptive use for the study population. With more numbers of girls 15-24 year olds in KDHS from 2014, it will be easier to isolate adolescents 15 -19 from young women 20 -24 and conduct specific national studies for each group and obtain evidence for better interventions. A study on the trends and determinants of contraceptive method choice among adolescents 15-19 would be useful for adolescent targeted programs.

Given the emerging trend of majority of modern contraceptive users living in regions of low contraceptive use, a study on contraceptive use dynamics in regions of low contraceptive use would be useful to shed more light on the issue. Smaller qualitative studies to examine more critically, the identified determinants are called for especially for education and wealth status.

The study has revealed inconsistency in use of long term methods among women with secondary education. More research targeting this group is called for to understand better why they would not embrace the more effective long term methods more than their less educated peers. In view of the increasing uptake of LARCs among 15-24 women, specific studies on

LARC use would be useful to inform improvements in LARC service provision and increase uptake.

REFERENCES

- Adetunji J. A. (2011). Rising Popularity of Injectable Contraceptives in Sub-Saharan Africa *African Population Studies* Vol 25 (2)
- AFIDEP and University of Southampton (2018). East African Regional Analysis of Youth Demographics. African Institute for Development Policy
- American Academy of Paediatrics (2007). Contraception and Adolescents. *Pediatrics*, Vol 120 (5)
- Bbaale, E. and Mpuga, P. (2011). Female Education, Contraceptive Use, and Fertility: Evidence from Uganda. *Consilience: The Journal of Sustainable Development* Vol. 6(1), 20–47.
- Brückner H., Martin, A. and Bearman, S. (2004). Ambivalence and Pregnancy: Adolescents' Attitudes, Contraceptive Use and Pregnancy. *Perspectives on Sexual and Reproductive Health*, 36(6):248–257
- Bulatao R., Palmore J. and Ward S. (1989). Choosing a Contraceptive Method Choice in Asia and the United States. Westview Press
- Castle S. and Askew I. (2015). Contraceptive Discontinuation: Reasons, Challenges, and Solutions. FP2020. Population Council.
- Chandra-Mouli, V., Lane C., and Wong, S. (2015). What Does Not Work in Adolescent Sexual and Reproductive Health: A Review of Evidence on Interventions Commonly Accepted as Best Practices. *Global Health: Science and Practice* Vol 3(3), 333-340
- Chersich M F., Wabiri N., Risher K., Shisana O., Celentano D., Rehle T., Evans M., Rees H.(2017). Contraception Coverage and Methods Used among Women in South Africa: A National Household Survey. *South African Medical Journal* Vol 107(4)
- Fotso J., Izugbara,C., Saliku, T. and Ochako, R. (2014). Unintended Pregnancy and Subsequent Use of Modern Contraceptive among Slum and Non-Slum Women in Nairobi, Kenya. *BMC Pregnancy and Childbirth*,14 :224
- FP2020, (2015). Annual Progress Report, Kenya. Available at [Http://www.Familyplanning2020.Org/Kenya](http://www.Familyplanning2020.Org/Kenya)
- FP2020, (2015). Global Consensus Statement for Expanding Contraceptive Choice For Adolescent And Youth To Include Long Acting Reversible Contraception. FP2020
- GoK (2017) Health Act No. 21 of 2017. Government of Kenya

Gribble, J. and Bremner, J. (2012). The Challenge of attaining the Demographic Dividend. Policy Brief. Population Reference Bureau

Guttmacher Institute (2016). Adolescents' Need for and Use of Abortion Services in Developing Countries. Guttmacher Institute

Guttmacher Institute (2018) Adding It Up: Costs and Benefits of Meeting the Contraceptive Needs of Adolescents In Developing Regions. Guttmacher Institute.

Guttmacher Institute. (2018) Contraceptive Use in the US. Factsheet. Guttmacher Institute

Harbison, S. and Adetunji, J (2009). Contraceptive Choice and Discontinuation in Selected African Countries: A Focus on Injectables.

Health Policy Project (2014). Impact Now Model: Estimating the Health and Economic Impacts of Family Planning Use. Health Policy Project (HPP), United States Agency for International Development (USAID) and Marie Stopes International (MSI) and Futures Group. Health Policy Project

Hubacher, D., Olawo, A., Manduku, C., Kiarie, J. and Chen, P (2012). Preventing Unintended Pregnancy among Young Women in Kenya: Prospective Cohort Study to offer Contraceptive Implants. *Contraception* 86(5)511–7.

Izugbara, C. O., Wekesah, F. M., Tilahun T., Amo-Adjei, J., and Tsala Z. T. (2018). Family Planning in East Africa: Trends and Dynamics. African Population and Health Research Center (APHRC), Nairobi, Kenya

Kenya National Bureau of Statistics (2015). Kenya Demographic and Health Survey 2014. Kenya National Bureau of Statistics and ICF Macro.

Kenya National Bureau of Statistics and ICF Macro (2010). Kenya Demographic and Health Survey 2008/09. Kenya National Bureau of Statistics and ICF Macro.

Kenya National Bureau of Statistics (2004). Kenya Demographic and Health Survey 2003. Kenya National Bureau of Statistics and ICF Macro.

Keyonzo, N., Nyachae, P., Kagwe, P., Kilonzo, M., Mumba, F., Owino, K., Kichamu, G., Kigen, B., Fajans, P., Ghiron, L., Simmons R. (2015). From Project to Program: Tupange's Experience with Scaling up Family Planning Interventions in Urban Kenya. *Reproductive Health Matters*, 23(45)

KHRC and RHRA, (2010). Teenage Pregnancy and Unsafe Abortion: The Case of Korogocho Slums. Kenya Human Rights Commission and Reproductive Health and Rights Alliance

Kimani, M., Njeru M. and Ndirangu, G. (2013). Regional Variation in Contraceptive Use in Kenya: Comparison of Nyanza, Coast and Central Provinces. *African Population Studies*, 27(1), 43-52.

Khraif R., Salam, A., Abdullah, A., Ibrahim, E. and Ajumah, A. (2017). Dynamics of Contraceptive Use: A Study of King Saud University Women Staff, Riyadh. *Middle East Society Journal Vol* 22(1).

Larson, C. and Stanfors M. (2014) Women's Education, Empowerment, and Contraceptive Use in Sub Saharan Africa: Findings from Recent Demographic Health Surveys. *African Population Studies*, 28(2).

Lindberg, L., Santelli, J. and Sheila, D. (2016). Understanding the Decline in Adolescent Fertility in the United States, 2007–2012 *J Adolesc Health Vol 59(5)*, 577–583

Magadi, M. and Curtis S. (2003). Trends and Determinants of Contraceptive Method Choice in Kenya. *Studies in Family Planning, Vol. 34(3)*, 149-159 Population Council

Magadi, M., Zulu E., Ezeh, A., and Curtis S. (2001). Contraceptive Use Dynamics in Kenya. Macro International Inc, Calverton, Maryland USA.

Mannan, H .R. (2002). Factors in Contraceptive Method Choice in Bangladesh: Goals, Competence, Evaluation and Access. *Contraception 65*, 357–364

Mann Global Health (2017). The Condom Program Pathway. Bill and Melinda Gates Foundation

Marston, C., Renedo, A., Nyaaba, G., Machiyama, K., Tapsoba, P and Cleland, J. (2017) Improving the Measurement of Fertility Regulation Practices: Findings from Qualitative Research in Ghana. *International Perspectives on Sexual and Reproductive Health, Vol. 43(3)*,111-119

MoEST (2014). 2014 Basic Education Statistical Booklet. Ministry of Education, Science and Technology.

MoH (2017). National Family Planning Costed Implementation Plan 2017-2030. Ministry of Health.

MoH, Kenya (2016). National Family Planning Guidelines for Service Providers. Ministry of Health, Kenya.

MoH (2015). National Adolescent Sexual and Reproductive Health Policy. Republic of Kenya.

MoH (2013). Adolescent and Youth Evidence Based Interventions in Kenya. Ministry of Health, Kenya.

MoPHS (2010). Introducing Community-Based Distribution (CBD) of Injectable Contraceptives: Experiences and Outcomes from a Pilot Project in Tharaka District, Eastern Province of Kenya. Tharaka, Kenya. Division of Reproductive Health, FHI 360, Jhpiego, USAID/APHIA II, Eastern, Tharaka District Health Management Team. Ministry of Public Health and Sanitation.

Mumah, J., Machiyama, K., Mutua, M., Kabiru, C. and Cleland, J. (2015). Contraceptive Adoption, Discontinuation, and Switching among Postpartum Women in Nairobi's Urban Slums. *Studies in Family Planning; 46(4)*, 369–386.

NCPD (2018). State of Kenya Population Report 2017. National Council for Population and Development.

NCPD (2017). Kenya's Demographic Dividend Roadmap. National Council for Population and Development.

NCPD (2015). National Adolescent and Youth Survey. National Council for Population and Development.

NCPD (2013). Kenya Population Situation Analysis. National Council for Population and Development.

NCPD (2012). Population Policy for National Development. National Council for Population and Development

NCPD, UNFPA, AFIDEP and Choice4Change (2016). Teenage Pregnancy and Motherhood Situation in Kenya: The County Burden and Driving Factors. Policy Brief. National Council for Population and Development, UNFPA and AFIDEP.

New, J., Cahill, N., Stover, J. and Alkema, L. (2017). Levels and Trends in Contraceptive Prevalence, Unmet Need, and Demand for Family Planning for 29 States and Union Territories In India: A Modelling Study Using the Family Planning Estimation Tool. *The Lancet Glob Health Vol. 5*, 350-358

Norton, M., Chandra-Mouli, V. and Lane, C (2017). Interventions for Preventing Unintended Rapid Repeat Pregnancy among Adolescents: A Review of the Evidence and Lessons from High Quality Evaluations. *Global Health Science and Practice 5*(4), 547-570

Obare, F., Birungi, H., Chi-Chi U., Wanjiru, M., Liambila, W., Askew, I. (2011). Levels, Trends and Determinants of Contraceptive Use among Adolescent Girls in Kenya. Population Council. Aphia II Operations Research Project/ Population Council

Ross J., Keesbury, J. and Hardee, K. (2015). Trends in the Contraceptive Method Mix in Low and Middle Income Countries: Analysis Using a New Average Deviation Measure. *Global Health: Science and Practice Vol 3*(1)

Sedgh G., Finer L., Bankole A., Eilers M. and Singh S. (2015) Adolescent Pregnancy, Birth, and Abortion Rates across Countries: Levels and Recent Trends. *Journal of Adolescent Health*, 2015, 56(2):223–230.

Temple-Smith, M. and Sancil, L. (2017). LARCS as First-Line Contraception: What Can General Practitioners Advise Young Women? The Royal Australian College of General Practitioners

Tsui A.O., Brown W., and Qingfeng Li. (2017). Contraceptive Practice in Sub-Saharan Africa. *Popul Dev Rev*, PMC

Tsui A.O., McDonald-Mosley R. and Burke A. E. (2010). Family Planning and the Burden of Unintended Pregnancies. *Epidemiol Rev.* 32(1), 152-174.

United Nations (2015). Trends in Contraceptive Use Worldwide 2015. Department of Economic and Social Affairs, Population Division

World Health Organization (2017). Republic of Kenya. Adolescent Contraceptive Use. Data from the Kenya Demographic and Health Survey, (KDHS) 2014. World Health Organization

Yinger N. (2016). Meeting the Need, Fulfilling the Promise: Youth and Long Acting Reversible Contraceptives. Policy Brief. Population Reference Bureau.