

Assessing (in) equalities in contraceptives use and family planning demand satisfied with modern contraceptives in Kenya. Have socioeconomic disparities narrowed?

Gichangi P., Waithaka M., Thiongo M., Agwanda A.

Introduction

Family planning plays an important role in reducing high-risk and unwanted pregnancies, which significantly reduce the risk of maternal and child deaths (Bongaarts and Weston 2000; Marston and Cleland 2004; Conde-Agudelo et al 2007; Prata et al, 2009). Studies have indicated that through the prevention of unintended pregnancies, use of family planning has reduced maternal mortality by 44 percent and if all women with unmet became contraceptive users then a further 29 percent of deaths could be reduced (Fabic et al 2015). The Sustainable Development Goals (SDG) target 3.7 calls for universal access to family planning services to ensure healthy lives and well-being¹. Despite tremendous investment and an enormous increase in family planning use, significant disparity still exists in a number of developing countries (Choi & Fabic, 2018).

Past studies have also indicated that there is evidence that inequality in service use changes over time, as overall use of services increases (Health Policy Initiative (HPI), 2007). Many studies conducted in the developing world have showed that wealthier women are more likely to use family planning methods and maternal health care services than their less wealthy counterparts (Boerma et al, 2008; Hosseinpoor et al, 2011; Baros et al 2012). A study of data from 46 developing countries found that the CPR of the richest population quintile averages 51 percent, compared to 32 percent among the poorest quintile (Ross, 2015). Despite the disparities between the poor and rich, the nature and trends appear to depend in the context (Health Policy Initiative, 2007; Foreit et al 2010). For example, a recent study in Ethiopia showed that the relative inequality in family planning use and contraceptive needs satisfied between wealthiest and poorest women significantly dropped between 2005 and 2011 in rural Ethiopia but not among urban women (Muluneh, 2015). Data from the past DHS in Kenya showed that between 2003 and 2008, use of modern contraceptives in urban areas increased from 40 to 47 percent due to rapid growth among the poorest quintiles while use in rural areas grew from 29 to 37 percent, but wealth differentials persisted (Foreit et al 2010). The trends in uptake of modern contraception from KDHS show narrowing of differences by rural-urban residence but not by level of educational attainment (ICF Macro 2015 Stat compiler-see supplementary data)¹.

¹ United Nations Statistics Division. *Indicator: 3.7.1 - Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods*. Available from: <http://unstats.un.org/sdgs/indicators/database/?indicator=3.7.1>

Choi & Fabic, (2018) suggests that for countries to achieve the goal of leaving no one behind, within country disparities needs to be monitored and addressed because people at lower social stratum are likely to be left behind and excluded from these priority services. There are now calls for analysis of data on a country-specific and subgroup basis to pinpoint inequalities in service use (Ross, 2015; HPI 2007). The existing disparities continue to pose a challenge to achieve national health sector development program targets and universal family planning coverage.

The purpose of this paper is to analyze inequalities in the use of family planning (FP) services based on recent data to better understand how to improve the effectiveness of reproductive health (RH) policies and programs. This study therefore examines trends in inequality in key family planning indicators by household wealth, age of women, marital status and rural-urban residence in Kenya during period 2014–2017 in order to ascertain whether, the socio economic disparities have narrowed. Monitoring trends in disparities is useful to determine the extent to which programs can be targeted to those who need most and identify key reasons for disparity between the different groups. Studies on factors influencing access to services indicate that other than deeply rooted structural causes, factors at the health system level such as quality of the services, hospitality factors and frequent stock outs might prevent vulnerable groups from using family planning services (Dehlendorf et al 2010).

Methodology

Data

Data used in this analysis are from Performance Monitoring and Accountability 2020 (PMA2020) cross surveys conducted in 11 counties (Bungoma, Kilifi, Kitui, Kiambu, Kericho, Nandi, Nyamira, Nairobi, Siaya, Kakamega and West Pokot counties) in Kenya between 2014 and 2017. PMA2020 household surveys uses questions extracted from Demographic and health survey (DHS) with additional custom-made questions to gather data about households and individual females that are comparable across program countries and consistent with existing national surveys. In these surveys, data are collected using a multi-stage cluster design with urban/rural regions as strata. Female respondents are eligible to participate in the surveys if they are aged 15-49 years. Interviews are conducted after informed consent (or parental consent as well as assent from the minors) is obtained. All interviews are conducted by trained interviewers who are residents in the respective enumeration areas using a smart phone in spaces which offer visual and audial privacy. Once Data is collected from the field, it is

submitted to a secure server with encryption using Open Data Kit (ODK) for aggregation into the central database.

Study variables

Contraceptive prevalence rate (CPR) and demand for family planning satisfied by modern methods (mDFPS) are the main response variables in this analysis. In addition, we also assessed the type of contraceptive methods used: a) short acting methods (injectables, contraceptive pills, condoms, diaphragms, spermicidal agents, emergency contraception and LAM); b) long acting (IUDs, hormone implants) and permanent (male and female sterilizations) methods; c) traditional methods (periodic abstinence, withdrawal and other folkloric methods). CPR is defined as proportion of women using any contraceptive method among all women who participated in the study. mDFPS is defined as the proportion of women using modern contraceptives among women with demand for family planning (FP). Women with demand for FP include all women using any method of contraception and women with unmet need for FP (i.e., sexually active women who reported a desire to delay, space, or limit childbearing but are not currently using contraceptive use).

The main predictor variables were demographic and socioeconomic status which were proxied by household wealth quintile with categories labelled poor (lowest and lower wealth quintile), middle, and rich (higher and highest wealth quintile), age of the respondent (adolescent (15-19 years) and other women (20-49 years)), education level (none, primary, and secondary or higher), residence (urban or rural) and marital status (currently in union or not in union).

Statistical analysis

Descriptive statistics are used to show the patterns in contraceptive use and demand for FP satisfaction with modern methods. To assess disparity and equality trends across subgroups we considered and chose to use absolute differences over relative differences for various reasons. There have been debates on measures of disparities and Keppel et al (2005) proposed 11 guidelines for consistency in reporting noting that there should not be a single way to measure disparity. However, Hosseinpoor et al (2016) tested the 11 different measures and concluded that they are more remarkable for their similarities than for their differences. Further, simple pairwise measures tended to support the same conclusions as complex summary measures. Hosseinpoor et al (2016) recommended that for the sake of clarity and ease of understanding, reporting simple pairwise measures rather than more complex measures suffices when both classes of measures is likely to lead to the same conclusion.

Though monitoring relative difference over time has the advantage of having changes in the

underlying rates between subgroups already adjusted (Keppel, et al., 2005), relative difference may, however, over- or under-emphasize disparity when levels across subgroups are relatively low or high, respectively. In addition, while using relative differences, there's a challenge in the selection of a reference group, since the measure can be sensitive to the choice (Keppel, et al., 2005). On the other hand, absolute difference is an intuitive summary measure of disparity whose trend is determined by various trends among subgroups (Keppel, et al., 2005). For example, decreasing disparity can result from different trends in 2 subgroups: improvement in both groups but more rapid improvement in a disadvantaged group; or improvement in the disadvantaged group but no improvement or even deterioration in the advantaged group (Choi & Fabric, 2018).

For the absolute difference, we calculated the percentage-point difference between the most and the least advantaged groups. That is, for age (adolescent and other women); for education (between secondary or higher education and no education); for wealth (rich and poor); for residence (urban and rural); and for marital status (currently in union and not in union). The reference point for the absolute difference was the least advantaged group i.e. adolescents group (by age), no education group (by education), poor group (by wealth), rural residents (by residence) and unmarried group (by marital status).

Multivariable logistic regression models were then employed to estimate the effects of the predictors the response variables, and especially to evaluate how the gap between the most advantaged and the least advantaged categories varied over time. STATA 15.0 statistical software was used for all analyses (Stata Corporation, College Station, TX, USA) and took into account sampling weights, as well as clustering and stratification where appropriate.

Ethical considerations

Ethical approval for conducting PMA2020 study was provided by Kenyatta National Hospital/University of Nairobi ethical review committee (REF: P15/01/2014) and National Commission for Science, Technology and Innovation (REF: NACOSTI/P/14/0813/1676).

Results

Characteristics of the study population

¡Error! No se encuentra el origen de la referencia. presents the distribution of the study population according to their demographic and socio-economic characteristics. Though the minority of women in the sample has consistently been adolescents, the proportion of adolescent participants has increased significantly from 16.3% in 2014 to 21.6% in 2017 ($p < 0.001$). The proportion of women with primary or vocational education dropped significantly from 51.8% in 2014 to 48.7% in 2017

($p < 0.001$); while that of women with no education increased slightly from 3.8% in 2014 to 4.8% in 2017 ($p = 0.001$) and that of women who reached the secondary education or higher markedly increased from 44.4% in 2014 to 46.5% in 2017 ($p = 0.003$).

Participation in the study among women residing in rural areas significantly rose from 59.0% in 2014 to 70.1% in 2017 ($p < 0.001$). The large majority of women in the sample are married but over time, the proportion of unmarried significantly increased ($p < 0.001$). Among the current users of contraception, there has been significant increase in the proportion using long term methods (26.9% in 2014 to 38.7% in 2017 ($p < 0.001$)) while the proportion of users of short term methods has been declining.

Table 1: Demographic characteristics and socio-economic characteristics

Variable	Year 2014	Year 2015	Year 2016	Year 2017
All participants	8,083	9,317	5,885	5,876
Age				
Adolescents (15-19)	16.3	18.1	21.8	21.6
Other women(20-49)	83.7	81.9	78.2	78.4
Education				
No education	3.8	4.1	4.8	4.8
Primary or vocational	51.8	50.9	50.0	48.7
Secondary or higher	44.4	45.0	45.2	46.5
Household wealth				
Poor	46.8	41.6	39.4	41.2
Middle	18.5	20.4	20.7	19.8
Rich	34.7	38.0	39.9	39.0
Residence				
Rural	59.0	60.7	68.5	70.1
Urban	41.0	39.3	31.5	29.9
Marital status				
Unmarried	37.0	39.2	40.6	42.1
Married	63.0	60.8	59.4	57.9
Current contraceptive method used				
Long acting/ permanent	26.9	32.2	37.2	38.7
Short acting	72.0	64.4	60.0	58.8
Traditional	1.1	3.4	2.8	2.5

Trends in use of contraceptive methods

¡Error! No se encuentra el origen de la referencia. shows trends in the use of contraceptive methods, demand for family planning and the proportion of the demand that is satisfied with modern methods over time. From the results, family planning use, demand and demand satisfaction have been increasing over time. Specifically, the proportion of women using any contraceptive method significantly increased from 41.3% in 2014 to 45.0% in 2017 with a trend analysis for proportions slope

(or regression slope) of 0.01 ($p < 0.001$). Proportion of women using modern contraceptive methods increased by 3.0% from 40.9% in 2014 (regression slope=0.008; $p = 0.004$). About 58.9% of the women had a demand for FP in 2014 satisfied, which increased to 62.3% in 2015 and then there was a significant decrease to 57.5% in 2017. The general decrease in total demand was significant (regression slope=-0.007; $P = 0.005$). The percent of demand for FP satisfied with modern contraceptives rapidly increased between 2014 and 2015 (from 69.4% to 74.4%) then there was a slow rise to 76.3% in 2017, this increase was significant (regression slope=0.02; $P < 0.001$).

Table 2: Trends in contraceptives use, demand and demand satisfaction

Variable	Year 2014	Year 2015	Year 2016	Year 2017
Any contraceptive method use	41.3	47.9	45.6	45.0
Modern contraceptive method use	40.9	46.3	44.3	43.9
Total demand	58.9	62.3	58.5	57.5
Total demand satisfied by modern methods	69.4	74.4	75.8	76.3

Trends in contraceptive method mix

Table 3 shows the trends in contraceptive method mix by the demographic and socioeconomic characteristics of the sampled population. The methods have been broadly grouped into: a) short acting methods (injectables, contraceptive pills, condoms, diaphragms, spermicidal agents, emergency contraception and LAM); b) long acting (IUDs, hormone implants) and permanent (male and female sterilizations) methods; and c) traditional methods (periodic abstinence, withdrawal and other folkloric methods).

The results shows a dramatic decrease overtime of the share of short-acting methods (from 72.0% in 2014 to 58.8% in 2017) and an increase in the share of long-acting and permanent methods (26.9% in 2014 to 38.7% in 2017). There was an upsurge in use of traditional methods between 2014 and 2015 which was then followed by a decrease since 2015 through 2017. These changes suggest a shift to more effective long term methods.

By age, the increase in the share of long-acting and permanent methods has been more important among women between 20 – 49 years (having increased from 27.2% in 2014 to 39.7% in 2017) than among the adolescents (from 19.4% in 2014 to 20.5% in 2017) which is as expected. Similarly, the decrease in share of short-acting methods between 2014 and 2017 was more pronounced among women aged 20 – 49 years (13.7%) as compared to the decrease in use of short-acting methods among adolescents (6.5%). Conversely, the use of traditional methods since 2015 has been higher among adolescents than among other women.

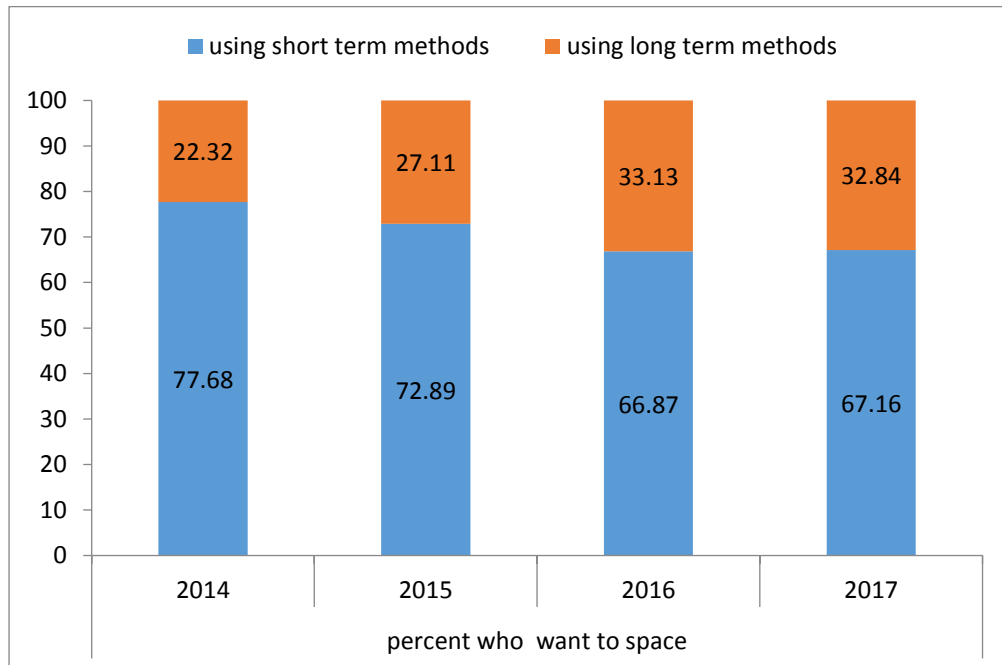
Though uptake of long-acting and permanent methods over time has been on the increase across all the categories, we observe from the results that the uptake have been higher among the least advantaged women as compared to their most advantaged counterparts. Indeed, the share of long-acting and permanent methods over time was higher among women with no education (37.4%, 42.9%, 48.8% and 61.7% using long-acting and permanent methods in 2014, 2015, 2016 and 2017 respectively) as compared to their counterparts with secondary or higher education (26.7%, 29.8%, 34.2% and 30.9%). The share of long acting and permanent methods among women from poor households was higher (26.2%, 31.5%, 37.6% and 40.0% using long-acting and permanent methods in 2014, 2015, 2016 and 2017 respectively) as compared to the those from richer households respectively). The same observation could also be observed among the women from rural areas as compared to their counterparts in urban areas. By marital status, uptake of long-acting and permanent methods over time was higher among married women as compared to the unmarried women.

With regards to short-acting methods, there has been a general decrease in share across all categories. Among unmarried women, there has been a consistent increase in use of traditional methods since 2014. The results clearly show a marked change in trends in the method mix when compared with the findings from previous studies. For example, Fotso et al (2013) observed that between 1993 and 2009, the proportion of long-acting method users in Kenya dropped by half from 39.0 percent to 18.2percent. The results in changes in contraceptive method mix indicate that even the more socially disadvantaged groups are shifting towards the use of more effective long acting methods. It can be said that use of long term modern contraceptive methods is becoming entrenched in Kenya.

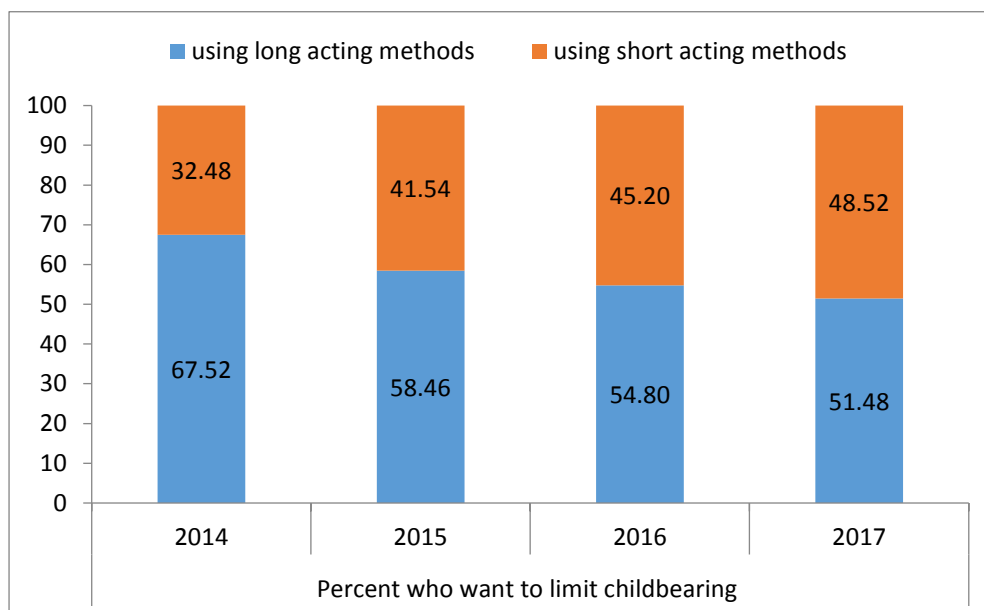
Table 3: Percent Distribution of FP users by contraceptive method used and year of survey

Variable	Long acting and permanent				Short acting				Traditional			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Total	26.9	32.2	37.2	38.7	72.0	64.4	60.0	58.8	1.1	3.4	2.8	2.5
Age												
Adolescents	19.4	14.6	23.2	20.5	79.7	76.0	70.5	73.2	0.9	9.3	6.3	6.4
Other women	27.2	33.1	37.9	39.7	71.7	63.8	59.4	58.0	1.1	3.1	2.6	2.3
Education												
No education	37.4	42.9	48.8	61.7	60.6	49.1	48.1	36.4	2.0	8.1	3.1	2.0
Primary or vocational	26.7	33.7	39.4	44.7	72.4	63.6	58.6	53.6	0.9	2.7	2.0	1.7
Secondary or higher	26.7	29.8	34.2	30.9	71.9	66.2	62.1	65.7	1.4	4.0	3.7	3.4
Household wealth												
Poor	26.2	31.5	37.6	40.0	72.7	66.2	60.6	58.0	1.2	2.4	1.8	2.0
Middle	27.3	32.3	37.1	42.1	71.4	65.2	59.8	55.0	1.3	2.4	3.1	3.0
Rich	27.7	32.7	37.0	35.9	71.4	62.4	59.5	61.4	0.9	4.8	3.5	2.7
Residence												
Rural	26.4	33.4	38.0	40.3	72.9	64.2	59.6	57.5	0.7	2.4	2.4	2.2
Urban	27.6	30.4	35.6	35.2	70.7	64.8	60.7	61.5	1.7	4.8	3.7	3.3
Marital status												
Unmarried	20.4	20.2	26.3	29.7	79.0	76.7	70.1	66.4	0.6	3.0	3.6	4.0
Married	28.2	35.2	39.9	41.2	70.6	61.3	57.5	56.7	1.2	3.5	2.6	2.1

Figures 1a and 1b show trends in share of use of long and short term methods by fertility intentions. Figure 1a shows trends in the proportion of those who would want to space their children by whether they were using short term or long term methods. Figure 1b show trends among those who want to limit their family sizes.



Among users who want to space their children, the share of short term methods has been high but reducing since 2014. The same trends are shown by users who want to limit their family sizes (Figure 1b). A key observation is that even though there has been an increase in share of long term use, a large proportion of those who want to limit their family sizes are still using methods which are unlikely to meet their desires. That is nearly half of women would want to stop childbearing but continue to depend on short acting methods. The results portrayed here may be consistent with similar observations made in Ghana where educated urban women achieve desired family goals using a blend less effective methods such as abstinence, withdrawal, condoms or emergency contraception (Marston et al., 2017) but such an assertion may require further research in these contexts.



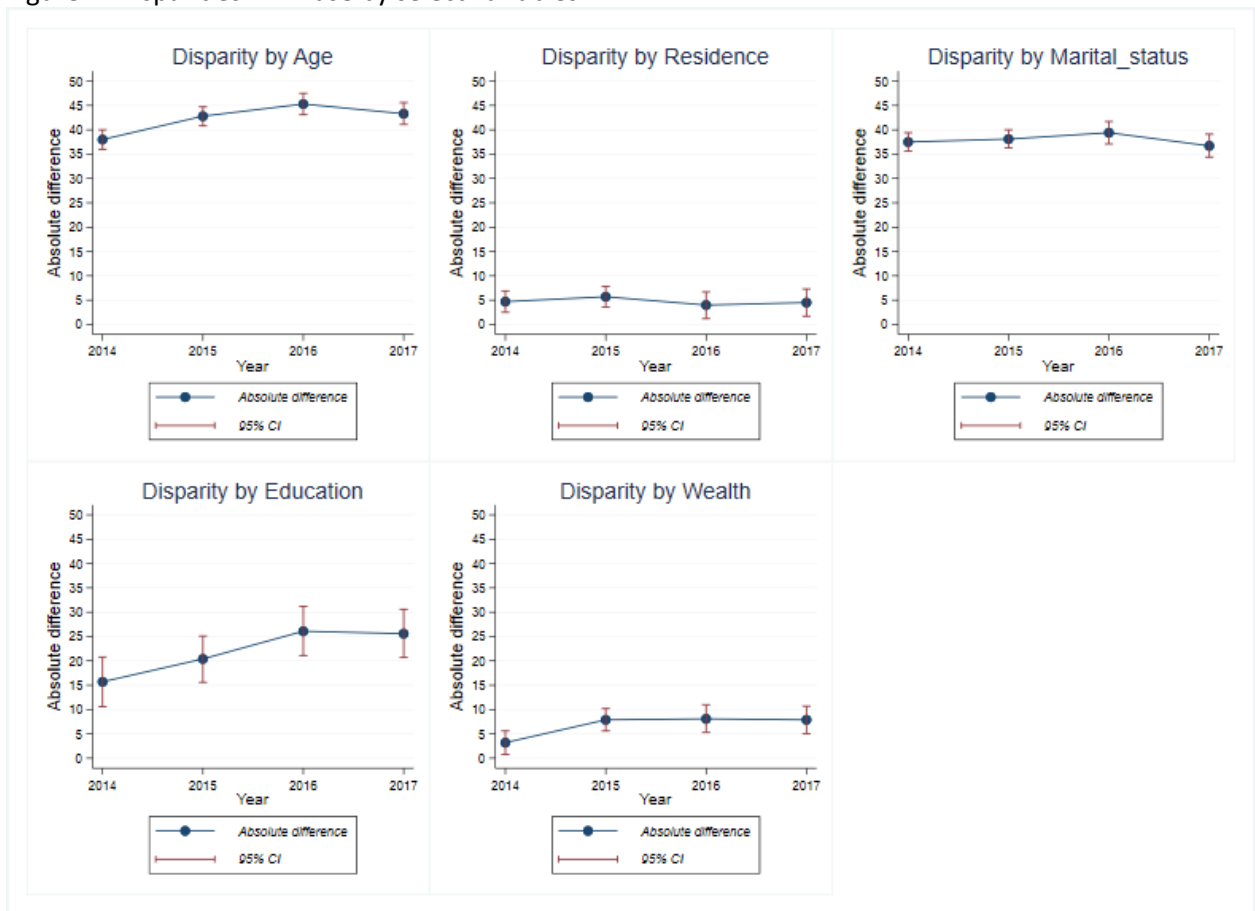
Levels and trends of in use of contraceptive methods: Are disparities narrowing or widening?

This section examines trends in disparity in use of methods in order to ascertain the extent to which certain groups are likely to be left behind. **¡Error! No se encuentra el origen de la referencia.** shows the trends in contraceptive use disparities by age, residence, marital status, education and household wealth levels and the corresponding 95% CI. For all the characteristics, there are marked disparities in FP use by all the variables considered across the years ($P < 0.05$). The largest disparity occurs by age, marital status and education. For age, the largest increase in disparity occurred between 2014 and 2015 there after it has remained almost the same. The percentage point differences in FP use between adolescents and other women being 38.0%, 42.8%, 45.3% and 43.3% in 2014, 2015, 2016 and 2017 respectively. FP use among married women was higher than among their unmarried counterparts, with the percentage difference being 37.5%, 38.1%, 39.4%, and 36.7% in 2014, 2015, 2016 and 2017 respectively.

FP utilization among women with secondary or higher education has also been higher than among those with no education. The same occurred by wealth index where women from resource poor households utilize FP methods less than women from rich households.

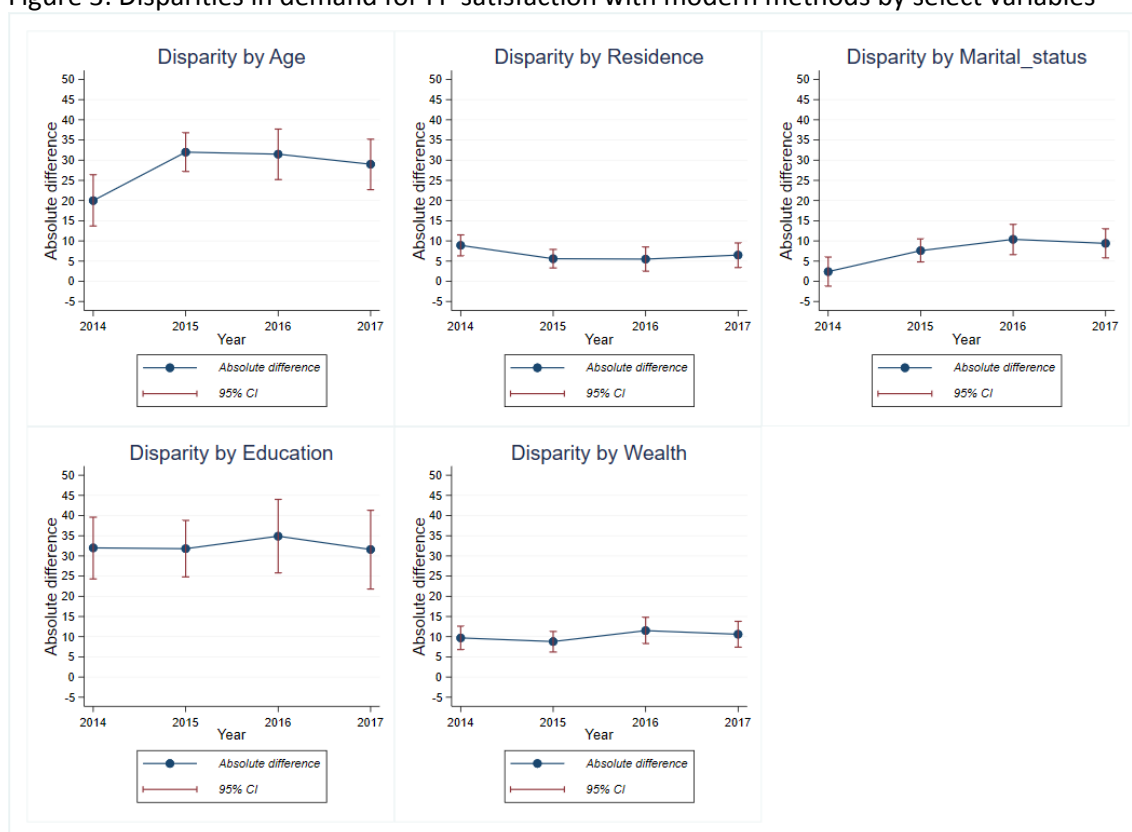
From the results, there appears to be a pattern of widening poor-rich inequalities (since education can be considered to be closely related to wealth). The widening gap occurred mainly from 2014 up to 2016 but narrowed somewhat in 2017. Compared to the other indicator variables, the inequality gap by place of residence seems narrowest. The trends appear similar to observed disparities from previous studies (Fotso et al 2013).

Figure 2: Disparities in FP use by select variables



Levels and trends of disparity in demand for FP satisfied with modern methods

Figure 3: Disparities in demand for FP satisfaction with modern methods by select variables



In Figure , the disparities in demand satisfaction with modern contraceptive methods with the corresponding 95% CI are shown. From the results, we observe consistently high disparities in demand satisfaction with modern methods among the highly educated and those with no education. The disparity in demand satisfaction with modern methods between adolescents and other women sharply increased between 2014 and 2015, which was thereafter followed by slow decrease. Over time, the gap in demand satisfaction between married and unmarried women have been widening whereas between rural and urban women, the gap in demand satisfaction have been narrowing. In addition, there seems to be no much change over time in the magnitude of the disparity in demand satisfaction with modern methods by wealth index. The trends appear similar to observed disparities from previous demographic and health surveys since 1989.

Assessing the disparities in contraceptive use and demand satisfaction by demographic and socioeconomic variables

Table 4 shows the results of unadjusted odds ratios (OR) and odds ratios (aOR) adjusted for year and round of data collection as well as the county from which the data was collected. From the results, we observe that the odds of contraception use among other women is almost ten times higher than among adolescents (aOR=9.7; 95% CI: 8.6, 11.0). Among urban residents the odds of contraception use is 1.3 times higher than among rural residents (aOR=1.3; 95% CI: 1.1, 1.4). Married women also have significantly higher odds of contraception use compared to the unmarried women (aOR 5.6; 95% CI: 5.1, 6.2). Further, the results indicate that the odds of contraception use increases with increasing

education (Secondary or higher education: aOR 1.7; 95% CI: 1.4, 2.2). Similarly, the odds of contraception use increase with increasing wealth index (the rich: aOR = 1.3; 95% CI: 1.2, 1.5).

Similar results are observed for demand satisfied with modern contraception i.e. other women have significantly higher odds of having their demand for FP satisfied with modern contraception as compared to adolescents (aOR = 3.6; 95% CI: 3.1, 4.2); the odds of demand satisfaction with modern contraception among urban women is almost twice that of rural women (aOR = 1.8; 95% CI: 1.4, 2.2). Married women have significantly higher odds of having their demand for FP satisfied with modern contraception as compared to unmarried women (aOR = 1.5; 95% CI: 1.3, 1.7). Demand for FP satisfied with modern contraception also increases significantly with increasing education and wealth index [Secondary or higher education: aOR 2.7 (95% CI: 2.1, 3.4); the rich: aOR = 1.7 (95% CI: 1.5, 1.9)].

For age, marital status and education, the odds ratio increased when other factors were controlled for (adjusted odds ratio). For education, odds ratio declined while it remained the same for wealth index. This suggests that disparities by education may be confounded by the year of data collection and the county. There is a possibility that differences by education may be dependent also on the county of origin while differences by wealth index may be the same across the counties.

Table 4: Odds ratio and 95% confidence interval of contraception use and demand satisfied with modern methods according to socio-demographic characteristics

	Any contraceptive method use		Demand satisfied with modern methods	
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Age				
Adolescents	Ref.	Ref.	Ref.	Ref.
Other women	9.1 (8.1, 10.3)*	9.7 (8.6, 11.0)*	3.5 (3.0, 4.0)*	3.6 (3.1, 4.2)*
Residence				
Rural	Ref.	Ref.	Ref.	Ref.
Urban	1.2 (1.1, 1.3)*	1.3 (1.1, 1.4)*	1.4 (1.2, 1.6)*	1.8 (1.4, 2.2)*
Marital status				
Unmarried	Ref.	Ref.	Ref.	Ref.
Married	5.3 (4.8, 5.7)*	5.6 (5.1, 6.2)*	1.4 (1.3, 1.6)*	1.5 (1.3, 1.7)*
Education status				
No education	Ref.	Ref.	Ref.	Ref.
Secondary or higher	2.7 (2.2, 3.4)*	1.7 (1.4, 2.2)*	4.2 (3.4, 5.2)*	2.7 (2.1, 3.4)*
Wealth status				
Poor	Ref.	Ref.	Ref.	Ref.
Rich	1.3 (1.2, 1.5)*	1.3 (1.2, 1.5)*	1.7 (1.5, 1.9)*	1.7 (1.5, 1.9)*

Note: OR – Odds Ratio; aOR – Adjusted Odds Ratio; 95% CI – 95% Confidence Interval

Discussion and conclusions

Drawing from a representative sample of women from 11 counties in Kenya, this paper examined trends in disparities on use of modern contraception and proportion of demand satisfied. The data suggests that there has been an increase in the uptake of modern methods for contraception across all the socio economic groups. Further, there has been an increase proportion of demand satisfied and unmet need declined across all the socio economic groups indicating that the use of family planning is becoming an anchored practice. In addition to increase in uptake, the patterns of use have been changing. There is a dramatic change contraceptive method mix with increasing share of long acting methods in the contraceptive market. The shift in the share of long acting methods was more pronounced among women in the lower socio economic strata. This result is in contrast to other studies in Africa using past demographic and health surveys data, which indicated increased use of use of short-term methods but unchanging or decline in long acting methods (Creanga et al 2011, Fotso et al 2013). The shift in patterns of use indicates that programs and providers need to focus more on sustaining demand by paying more attention to quality of service provision. This is highlighted by the observed large proportion of women would want to stop childbearing but continue to depend on short acting methods. This group of women can also be considered as that whose demand is not completely satisfied.

Despite the increase in use of modern methods, disparity in use still persists. The results of the logistic regression analyses confirm the existence of socio-economic inequality in contraception use as well as demand satisfaction with modern methods. The most disadvantaged groups include; adolescents, those residing in rural areas, the unmarried, those with no education as well as those from poor households. The results on trends in disparities are similar to an earlier study in Kenya (Fotso et al 2013) which indicated that there was narrowing of gap in uptake of contraception between women living in urban areas and those living in rural areas. But slightly different from Beguy et al (2017) study who also found substantial increase in contraception among poor urban women in urban Nairobi but a narrowing of gap between those with higher education and those with no or low education. In this study, education differences are unchanging which is consistent with a similar study by Asamoah et al (2013) for Ghana.

The results obtained here further confirm the need to examine disparities in different contexts because causes of disparities might vary in different contexts. Creanga et al, (2011) asserts that disparities can be the product of inequality that reflects different fertility intentions or; inequity which reflects different ability to achieve desired fertility but in most sub-Saharan African countries, both factors are involved. For clearer program interventions, there is need to focus on the understanding of major factors behind the continued disparities in use such as structural causes, quality of the services among others because a review barriers to method use among the poor can allow for a rigorous approach to closing the equity gap (Patierno et al 2018).

Some limitations

The data utilized in this study comes from the areas in the country that has higher levels of development and longer history of contraceptive use and therefore ignores poorer northern arid areas with lower use of contraceptive uptake which may require greater attention. The study only used absolute pair wise measures of disparity and therefore excluded insights that may come from use of relative differences. The study did also not attempt to decompose the different components of disparity such as changing distributions of the different groups.

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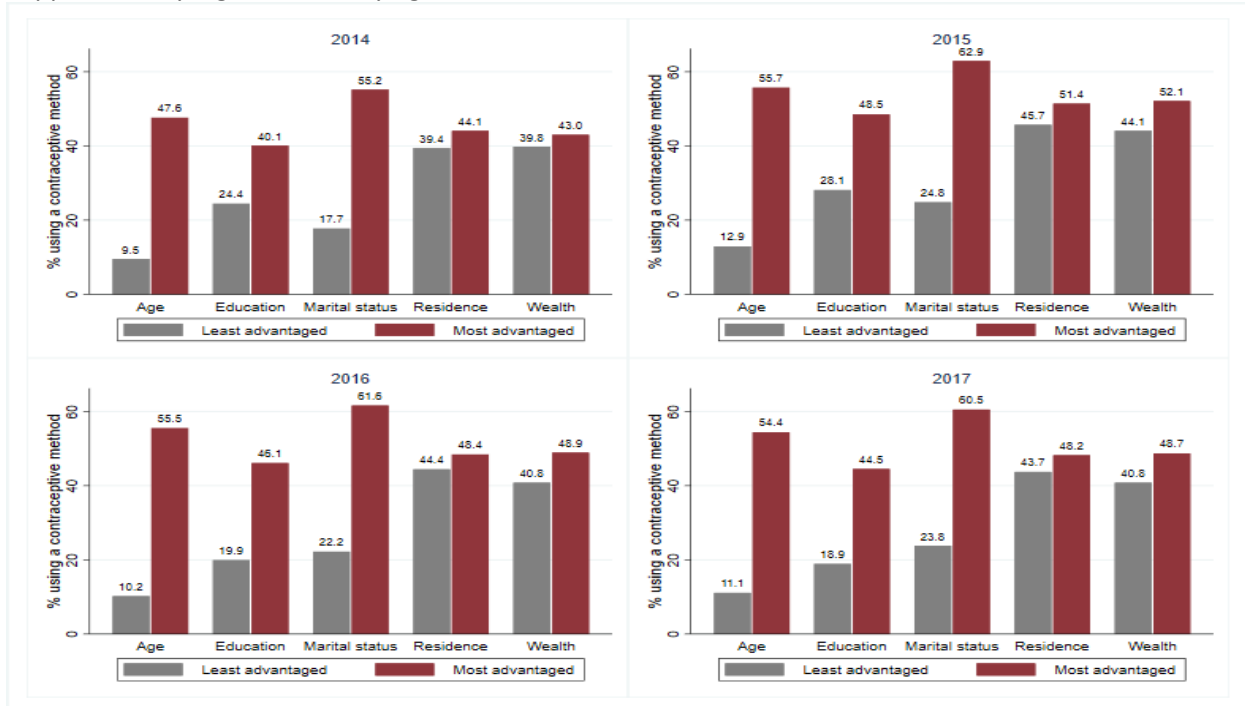
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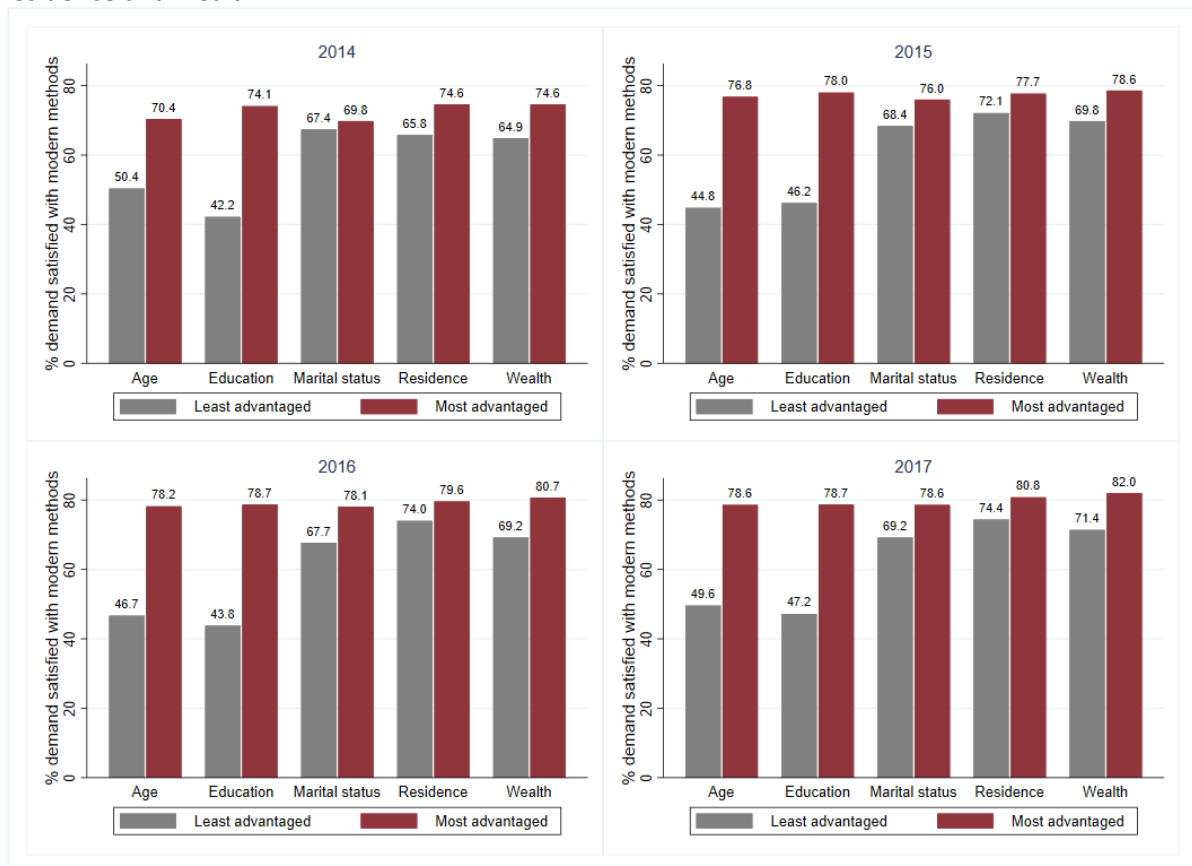
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Appendices

Supplementary Figure 1: CPR by age, education, marital status, residence and wealth

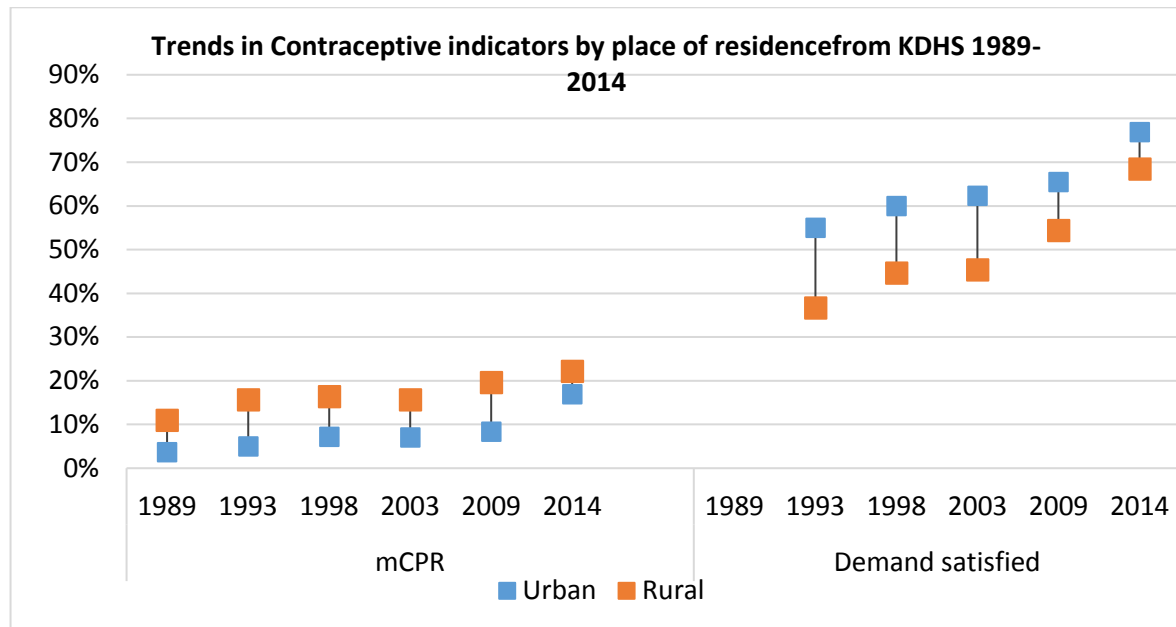


Supplementary Figure 2: Demand satisfied with modern methods by age, education, marital status, residence and wealth

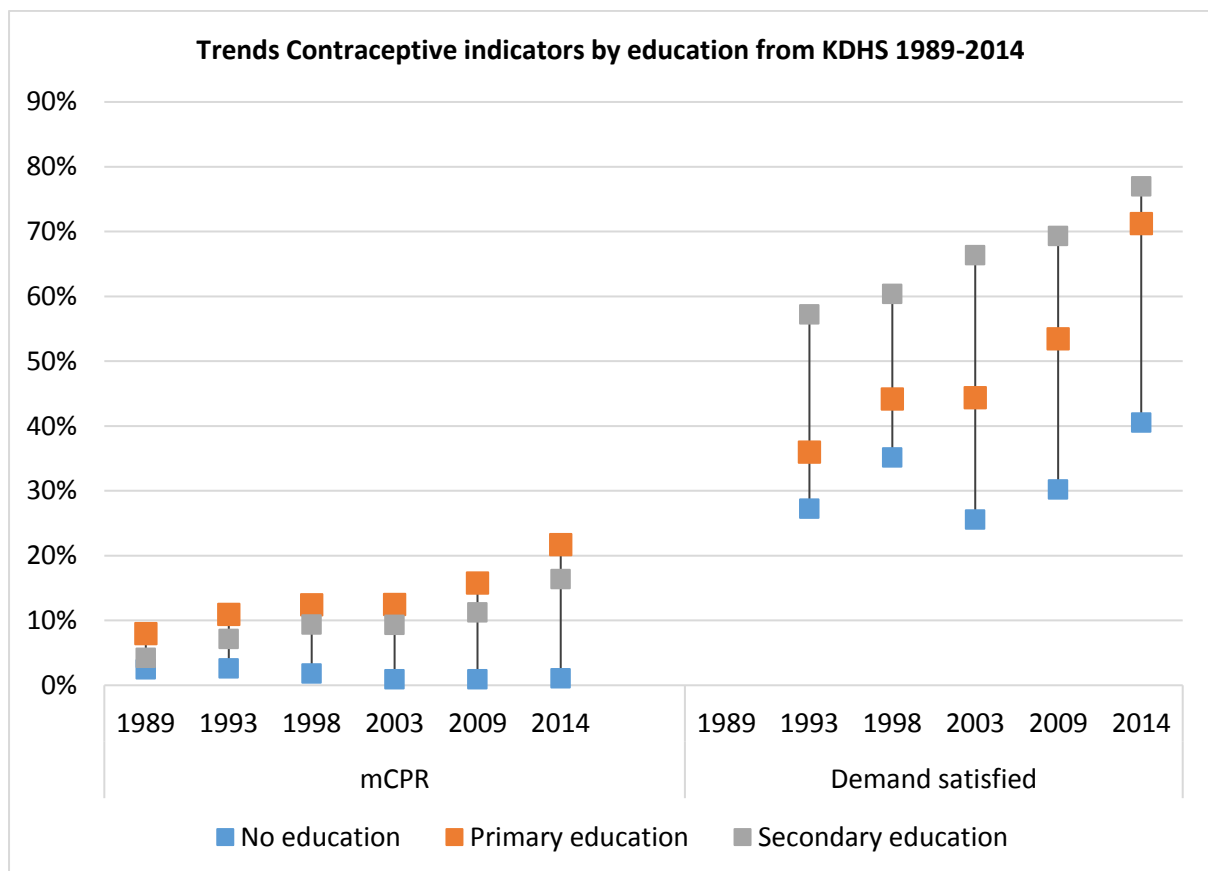


Note for Supp. Fig1 & 2: The least advantaged groups are: adolescents (by age), no education (by education), unmarried (by marital status), rural (by residence) and the poor (by wealth).

The most advantaged groups are: other women (by age), secondary or higher education (by education), married (by marital status), urban (by residence) and the rich (by wealth).



i



Source: computed from ICF macro. Statcompiler