



RESEARCH ARTICLE

REVISED **No one left behind: has the pursuit of FP2020’s 120 million additional users goal left some women behind? [version 2; peer review: 1 approved, 2 approved with reservations]**

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Abstract

Background: An important question is whether the FP2020’s “120 million additional users” goal exacerbated inequities and led to a prioritization of populations within countries where substantial gains towards the goal could be made. We examine FP2020 country data for signs of inequity in gains in modern contraceptive prevalence (MCP).

Methods: We selected 11 countries (Bangladesh, Burundi, Ethiopia, Haiti, Malawi, Mali, Nepal, Pakistan, Senegal, Sierra Leone, Uganda, and Zimbabwe) to conduct a bivariate analysis. We evaluated if MCP growth had been equitable by assessing MCP between two surveys stratified by residence, levels of education, age groups, marital status, and wealth.

Results: In most countries, MCP increased among rural women and in seven African countries these gains were significant. In six countries, MCP gains were significant both among women with no education and in the lowest wealth group. MCP gains among young women aged 15-19 and 20-24 were seen in four African countries: Malawi, Senegal, Sierra Leone, and Uganda.

Conclusions: Our findings suggest that between two surveys since 2010 many countries saw MCP gains across different dimensions of equity and do not suggest a focus on expanded coverage at the expense of equity. As the family planning community begins to look ahead to the next partnership, this analysis can help inform the emerging FP2030 framework, which includes equity as a guiding principle.

Keywords

global family planning, FP2020, FP2030, reproductive health, modern contraceptive prevalence

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REVISED Amendments from Version 1

We included additional rationale in the methods section on why we opted to use modern contraceptive prevalence over other family planning indicators such as unmet need and demand satisfied. We also edited our discussion section where we included additional details around the limitations of this analysis. Finally, we edited the wealth graphic (Figure 2) and education graphic (Figure 4) with detailed captions that provide additional descriptions on how to interpret the visualizations.

Any further responses from the reviewers can be found at the end of the article

Introduction

In 2012 at the London Summit on Family Planning, key family planning partners came together to reinvigorate the family planning movement and accelerate progress toward universal access to family planning. The summit led to the creation of the Family Planning 2020 partnership (FP2020) with the aim of improving access to voluntary family planning information and services and enable 120 million additional women to use modern contraceptives in 69 focus countries by 2020. Many in the family planning community welcomed the new commitments of aid from donors, new commitments by country governments, and the push to bolster family planning as a development priority; however, there were also concerns about the focus on numbers of contraceptive users and a global goal^{1,2}. Advocates pointed toward family planning's past experiences of coercion and targets, warning that the FP2020 goal could lead to a focus on numbers and prioritization of easier to reach populations.

One outcome of this early concern was a call by the family planning community for a clear focus on rights and empowerment as guiding principles of the FP2020 partnership³. A Rights and Empowerment Working Group was established by FP2020 to advance rights-based family planning, and the group provided early guidance to FP2020 and the family planning community. The FP2020 partnership now recognizes 10 rights and empowerment principles of family planning, including agency and autonomy; availability; accessibility; acceptability; quality; empowerment; equity and non-discrimination; informed choice; transparency and accountability; and voice and participation⁴. Over the last eight years of the partnership, FP2020 worked with partners to ensure that these rights principles are understood by family planning decision-makers, and incorporated into new commitments and family planning-costed implementation plans.

But monitoring whether these rights principles are adhered to has remained a measurement challenge that FP2020 and partners are still working on. Thus, one outstanding question as FP2020 begins to look toward the Family Planning 2030 (FP2030) partnership, is whether the FP2020 goal exacerbated inequities and led to a prioritization of populations within countries where substantial gains towards the 120 million goal could be made. Ultimately, we aim to examine whether the effort to accelerate progress and expand contraceptive use has left

some women behind. This question is particularly relevant in the context of a family planning partnership that supports the Sustainable Development Goals and the pledge that no one will be left behind⁵. To assess this question, we examined FP2020 country progress data for signs of inequity in the gains in modern contraceptive prevalence (MCP), in FP2020 focus countries since 2012. This research is critical for informing the FP2030 partnership (which builds on the work of FP2020), as family planning policy makers begin to turn their attention to new commitments.

Family planning progress and assessing inequity

FP2020's annual reporting of contraceptive use has been facilitated by the adoption of statistical models that allow the estimation of a number of key family planning indicators, including MCP, using all available surveys and country health management information system statistics⁶. These data indicate that as of July 2020, there were over 320 million total users of modern methods of contraception in the 69 FP2020 focus countries, i.e. 60 million additional users of modern contraception as compared to 2012. Since 2012, 26 countries have each gained more than 500,000 additional users of modern methods. Among these countries, 14 have seen the number of additional users grow by more than one million women and girls. While the pace of progress has been far short of the acceleration needed to achieve the FP2020 goal of 120 million additional users by 2020, there has been a clear focus by countries on increasing family planning coverage. As part of their FP2020 commitments, 45 countries established goals of increasing contraceptive prevalence through voluntary family planning programs. Almost all FP2020 countries addressed inequity in their FP2020 commitments as well, principally through commitments to improve access for adolescents and youth (41 countries), but also through efforts to address wealth and geographic inequities (13 countries). Progress has varied across regions and countries, but many countries across sub-Saharan and West Africa have seen rapid annual gains in modern contraceptive prevalence since 2012, most notably Mozambique at 2.7 percentage points per year, Burkina Faso at 1.4 percentage points, Malawi, and Sierra Leone at 1.3 percentage points, and Senegal at 1.2 percentage points.

Many researchers have addressed how to evaluate equitable access to public health programs, including family planning⁷⁻¹¹. One study across various areas of health concluded residence, race/ethnicity, occupation, gender/sex, religion, education, socioeconomic status, and social status are key sociodemographic factors that can elucidate inequities^{12,13}. A recent special issue analyzed inequalities in coverage of reproductive, maternal, newborn, and child health, and illustrated the wide inequality in reproductive health coverage in many countries across several dimensions, including wealth, age, and geography¹⁴. These analyses, however, did not examine changes in inequity over time, and the most recent examination of contraceptive prevalence was an examination of trends through the [Millennium Development Goals](#) era, relying only on surveys through 2013.

While there are multiple dimensions to equity, most researchers agree that wealth is essential to assess disparities in

contraceptive use. Recently published literature on FP2020 countries suggests poverty among married women declined over time while modern contraceptive use increased¹⁵. Furthermore, an analysis of 46 countries completed using data from many FP2020 countries (though outside the FP2020 period) from national surveys from 1990–2013, found that the contraceptive use gap between the poorest and the richest has narrowed and modern methods account for nearly all the increase in contraceptive use¹⁶.

In addition to examining differences related to wealth, in this analysis, we evaluate whether the growth in MCP has been equitable across multiple demographic characteristics, including residence (rural and urban), level of education (no education, primary, secondary, higher), age groups (15–19, 20–24, 25–29, 30–34, 35, 39, 40–44, 45–49), and marital status (married, all women, and unmarried sexually activeⁱ).

Methods

We examined data availability across the 69 FP2020 countries and selected 11 countries (Bangladesh, Burundi, Ethiopia, Haiti, Malawi, Mali, Nepal, Pakistan, Senegal, Sierra Leone, Uganda, and Zimbabwe), as they had data from two surveysⁱⁱ of the same survey type (Demographic and Health Surveys [DHS] or Multiple Indicators Cluster Surveys [MICS]) between 2010 and 2019, and were an FP2020 commitment-making country. Countries that did not meet these criteria were excludedⁱⁱⁱ. While FP2020 annual progress reporting relies on national-level modeled estimates of MCP, in this analysis we focused on survey data because models do not yet produce estimates for the majority of the dimensions of inequity examined in this paper. We included surveys from 2010 so we could complete the analysis for a larger pool of countries and assess progress during the years of the FP2020 partnership. The average number of years between two surveys was more than four. We also focused exclusively on FP2020 commitment-making countries because these countries had explicitly pledged to increasing contraceptive use.

We evaluated whether MCP growth had been equitable by assessing MCP between two surveys stratified by residence (rural, urban), levels of education (no education, primary, secondary, higher), age groups (15–19, 20–24, 25–29, 30–34, 35, 39, 40–44, 45–49), marital status (married, all women, unmarried sexually active), and wealth (poorest, poorer, middle, richer, richest). Our analysis uses MCPR as the outcome of interest because it is a widely understood and reliable measure that can be easily calculated across different surveys. Additionally, while evaluating increases in MCPR across equity dimensions alone does not contextualize the need-focused indicators such as

unmet need or demand satisfied, MCPR follows a reliable pattern of growth whereas unmet need and demand satisfied do not. Unmet need can increase in a country when demand for family planning is generated. It would be difficult to quantify from cross-sectional population-based surveys if unmet need in a country is increasing due to lack of programs or demand generation. Furthermore, the indicator of demand satisfied relies on the underlying assumption that women are satisfied with the method^{17,18}. As such, we used MCPR as our main outcome indicator.

In this paper, we present MCP by levels of the abovementioned dimensions: wealth, residence, education, age, marital status, and sexual activity. We conducted a bivariate analysis where MCP estimates for married women were stratified by each of the socio-demographic dimensions, and weighted using survey-specific weights; confidence intervals were also calculated. Estimates of MCP by age and for unmarried, sexually active women were calculated in the same manner but were for all women in the survey. MCP gains were considered significant if the 95% confidence intervals for MCP stratified by the above-mentioned different socio-demographic dimensions did not overlap between surveys. Though this approach to testing the differences in means using hypothesis testing is more conservative, this approach can be easily interpreted by a wider audience. The MCP gains were considered equitable if larger or equivalent gains were seen in comparatively more disadvantaged populations. In this analysis, we qualify disadvantaged populations as those that are rural, have no education, aged 15–19, unmarried and sexually active in the last 30 days, or the poorest (or poorer group).

To assess MCP change by wealth, we did not use the DHS or MICS calculated wealth quintiles as those should not be compared across surveys nor time¹⁹. Instead, we constructed five wealth groups based on Global Data Lab's International Wealth Index (IWI) guidance using household assets; the reconstruction of wealth groups allowed for cross-country and across-time comparisons²⁰. Global Data Lab's methods uses factor-loadings produced from a principal components analysis using data from over two million households across 97 countries. If, based on the IWI, 50% of a country's women reside in households with less than 50% of the assets, these women live in households that are among the poorer households globally.

We also evaluated whether the number of women in each of the socio-demographic dimensions changed between surveys. For example, did fewer women have “no education” in the latest survey compared to the older survey? Or, did households in which women reside gain wealth over time? These findings can also help contextualize if MCP gains were made in more advantaged socio-demographic groups at the expense of most of the population (provided that the most advantaged group in any country will make up a smaller proportion of the total population).

For MICS surveys from Sierra Leone, all data cleaning was completed in [RStudio](#) (version 4.0.2) since MICS surveys

ⁱ Data only available for surveys where unmarried women were interviewed.

ⁱⁱ Surveys with microdata available for use by June 2019.

ⁱⁱⁱ Vietnam met the criteria but was excluded from this analysis since Vietnam did not make a commitment to FP2020 until 2016 and the two surveys only overlapped the first two years of the FP2020 initiative (2010 MICS and 2014 MICS).

are saved as SPSS file and Stata 15 does not support SPSS files. For all DHS surveys, [Stata 15](#) was used to complete the analysis.

Ethical considerations

The DHS Program procedures and questionnaires have been approved by ICF Institutional Review Board. Furthermore, additional approval is obtained by the IRB in the country of the survey. According to the DHS Program, all surveys are in compliance with the Department of Health and Human Services policies for protection of human subjects and the IRB in the country of the survey ensures the questionnaire is in compliance with the country’s laws and norms. Moreover, before each interview is conducted participants are read a consent statement – the participant can accept or decline to participate. The consent emphasizes that participation is voluntary. Additional information on DHS Program’s ethical standards can be found here: <https://dhsprogram.com/methodology/Protecting-the-Privacy-of-DHS-Survey-Respondents.cfm>.

The MICS Program under UNICEF similarly follows strict ethical guidelines. According to MICS, during the planning and designing stage of the survey, a governing structure is established. This governing structure is responsible for the formation of the steering and technical committees that are responsible for the implementation of the survey. The steering and technical committees will include focal points for ethical review submission and process. Cultural norms will also be

used to adapt questionnaires as needed. Informed consent of all interviewees is required, and participation is voluntary.

Results

Overall, [Figure 1](#) illustrates that MCP increased in nine out of the 11 countries, though the increases were only significant in seven African countries: Burundi, Ethiopia, Malawi, Senegal, Sierra Leone, Uganda, and Zimbabwe.

Wealth

[Table 1](#) shows the changes in the size of wealth groups between the two surveys. In all 11 countries overall household wealth increased between the two surveys – i.e. the number of households in the poorest (those with 20% of the assets or less) or poorer (those with between 21–40% of assets) groups decreased. In Sierra Leone, every change in wealth group was significant and households accumulated more assets (i.e. more wealth) between the two surveys (2011–2016).

[Table 2](#) shows the changes in MCP between wealth groups between two surveys. [Figure 2](#) illustrates the changes in size of wealth group and MCP by survey. In every country, MCP increased in the lowest wealth group (those with 20% of the assets or less). These findings were significant in six countries – Burundi, Ethiopia, Malawi, Senegal, Uganda, and Zimbabwe. In Malawi, Senegal, Uganda, and Zimbabwe, the increase was around 10%; and in Malawi, the increase among the poorest was 16%.

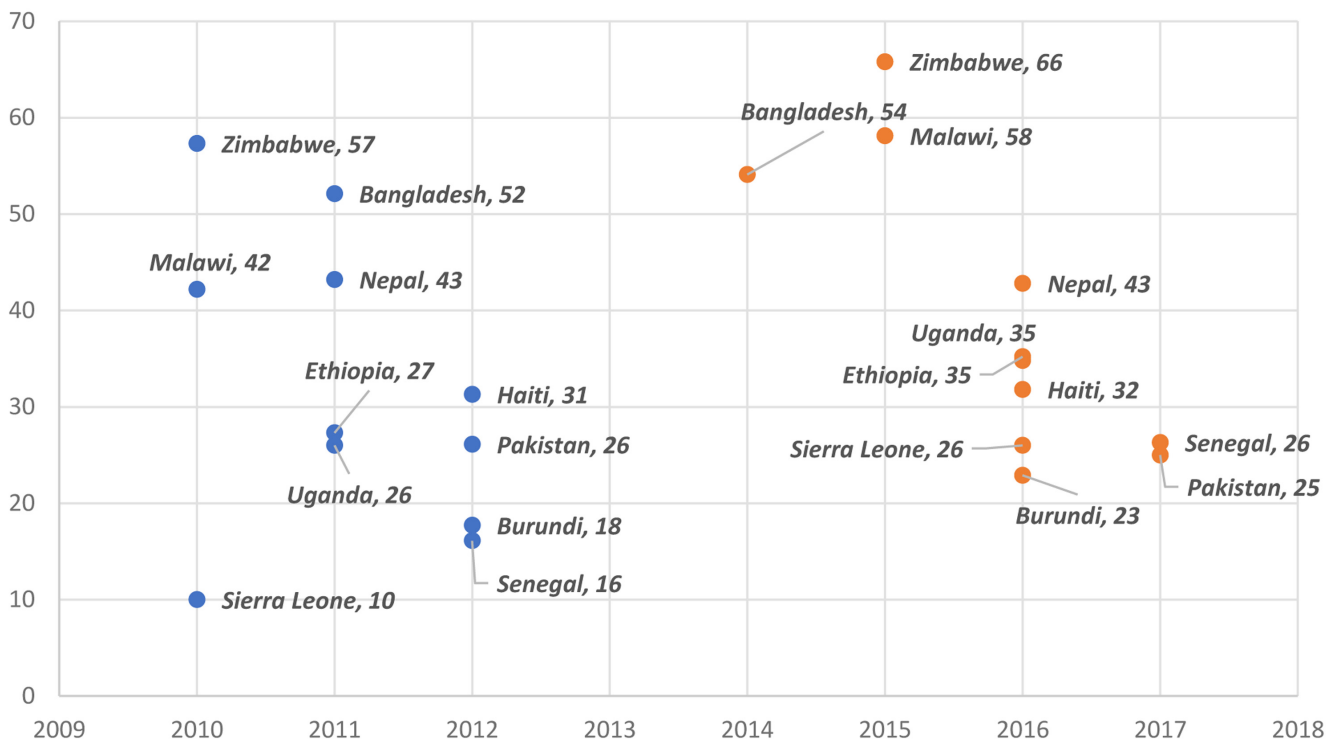


Figure 1. Burundi, Ethiopia, Malawi, Senegal, Sierra Leone, Uganda, and Zimbabwe had significant increases in modern contraceptive prevalence (MCP). Blue represents older survey and orange represents latest survey.

Table 1. How the size of wealth groups changed between surveys (only significant findings at 95% confidence are included). A downward arrow suggests wealth groups size decreased and households moved out of those groups and into another group.

	Poorest	Poorer	Middle	Richer	Richest
Bangladesh	↓			↑	
Burundi	↓	↑	↑		
Ethiopia					
Haiti					
Malawi	↓	↑	↑	↑	
Nepal	↓		↑	↑	
Pakistan		↓		↑	
Senegal	↓				↑
Sierra Leone	↓	↓	↑	↑	↑
Uganda		↓	↑	↑	
Zimbabwe					

Table 2. MCPR by wealth groups by country with significant MCPR increase denoted by * next to most recent survey estimate confidence interval.

Country	Survey	Poorest	Poorer	Middle	Richer	Richest
Bangladesh	2014 DHS	54 [51-58]	56 [54-58]	54 [51-56]	52 [49-55]	55 [50-59]
Bangladesh	2011 DHS	53 [51-55]	52 [50-54]	52 [50-54]	51 [48-53]	53 [49-57]
Burundi	2016-17 DHS	22 [21-23]*	24 [22-27]	28 [24-33]	29 [21-38]	32 [22-45]
Burundi	2010 DHS	16 [15-18]	20 [17-24]	31 [22-42]	37 [29-45]	45 [31-60]
Ethiopia	2016 DHS	33 [30-35]*	42 [37-47]	50 [43-57]	50 [43-56]	36 [27-45]
Ethiopia	2011 DHS	23 [21-26]	47 [41-53]	54 [46-61]	47 [39-55]	41 [33-49]
Haiti	2016-17 DHS	31 [28-33]	35 [31-37]	31 [31-39]	32 [21-28]	23 [17-34]
Haiti	2012 DHS	30 [15-18]	34 [17-24]	35 [22-42]	24 [29-45]	25 [31-60]
Malawi	2015-16 DHS	57 [55-58]*	60 [58-62]*	64 [60-68]*	54 [48-60]	59 [53-66]
Malawi	2010 DHS	40 [39-42]	47 [45-50]	45 [40-50]	59 [52-67]	64 [52-75]
Nepal	2016 DHS	41 [37-46]	44 [41-46]	42 [40-44]	43 [40-46]	47 [41-53]
Nepal	2011 DHS	37 [34-41]	43 [40-46]	45 [41-49]	49 [45-53]	54 [46-62]
Pakistan	2017-18 DHS	17 [12-22]	18 [18-23]	23 [23-28]	28 [29-33]	31 [30-35]
Pakistan	2012-13 DHS	16 [12-23]	20 [16-21]	25 [20-26]	31 [26-30]	32 [28-34]
Senegal	2017 DHS	16 [14-19]*	17 [16-19]*	21 [19-24]*	31 [28-34]	37 [34-41]*
Senegal	2012 DHS	6 [4-10]	8 [7-10]	13 [11-16]	26 [21-31]	26 [20-32]
Sierra Leone	2017 MICS	8 [1-40]	32 [25-41]*	33 [27-39]*	30 [25-35]	24 [18-31]
Sierra Leone	2011 MICS	6 [5-7]	14 [12-16]	21 [17-25]	24 [19-30]	27 [17-40]
Uganda	2016 DHS	28 [26-30]*	37 [35-39]*	42 [39-45]	43 [39-47]	47 [39-55]

Country	Survey	Poorest	Poorer	Middle	Richer	Richest
Uganda	2011 DHS	18 [16-20]	28 [26-30]	41 [36-46]	44 [34-56]	57 [45-69]
Zimbabwe	2015 DHS	62 [60-65]*	62 [59-66]	70 [66-74]*	73 [70-76]*	75 [68-81]
Zimbabwe	2010-11 DHS	53 [51-56]	57 [53-61]	61 [57-65]	61 [58-65]	69 [59-77]

MCPR, modern contraceptive prevalence rate; DHS, Demographic and Health Survey; MICS, Multiple Indicator Cluster Surveys.



Figure 2. Modern contraceptive prevalence rate (MCPR) by wealth group between two surveys. Each country has two bubbles per panel which represent the earlier and later surveys. Each panel represents the wealth groups from the poorest to richest. The size of the bubble represents the proportion of women in households in that wealth group. The height of the bubble represents MCPR. For example, looking at the panel for the poorest wealth group, in Nepal, the proportion of women in the poorest households decreased between the first and second survey. At the same time, the MCPR among the poorest women also increased.

In all countries except Bangladesh, women with average wealth (those in the middle of the five wealth groups) had higher modern method use than in the lowest wealth groups. However, the gap in modern method use between those in the middle wealth group and the lowest wealth group declined in most countries between surveys. Growth in MCP was more uneven when comparing growth between surveys in higher wealth groups. All but three countries saw declines in MCP in the highest wealth groups, although these findings were not significant given the lower sample sizes in the

richest groups per country. Conversely, in Senegal, there was a significant increase in MCP among the richest, which corresponds with a large significant increase in the number of people in the richest wealth group. See [Table 2](#) below for additional comparisons.

Residence

[Table 3](#) shows the MCP for countries disaggregated by residence. In every country in our analysis, modern contraceptive use was higher in urban areas than rural areas. Modern

Table 3. MCPR by residence by country with significant MCPR increase denoted by * next to most recent survey estimate confidence interval.

Country	Survey	Urban	Rural
Bangladesh	2014 DHS	56 [54-58]	53 [52-55]
Bangladesh	2011 DHS	54 [52-56]	51 [50-53]
Burundi	2016-17 DHS	29 [25-32]	22 [21-24]*
Burundi	2010 DHS	29 [25-33]	17 [15-18]
Ethiopia	2016 DHS	50 [46-54]	32 [30-35]*
Ethiopia	2011 DHS	50 [46-53]	23 [20-25]
Haiti	2016-17 DHS	33 [30-36]	31 [29-33]
Haiti	2012 DHS	31 [29-34]	31 [29-34]
Malawi	2015-16 DHS	61 [59-64]*	58 [56-59]*
Malawi	2010 DHS	50 [46-53]	41 [39-42]
Nepal	2016 DHS	44 [42-46]	41 [38-43]
Nepal	2011 DHS	50 [47-53]	42 [40-45]
Pakistan	2017-18 DHS	29 [27-31]	23 [21-25]
Pakistan	2012-13 DHS	32 [30-35]	23 [22-25]
Senegal	2017 DHS	37 [34-39]*	19 [17-21]*
Senegal	2012 DHS	27 [24-31]	9 [8-11]
Sierra Leone	2017 MICS	30 [28-32]*	16 [14-17]*
Sierra Leone	2011 MICS	16 [13-19]	8 [7-9]
Uganda	2016 DHS	41 [38-43]	33 [31-35]*
Uganda	2011 DHS	39 [36-43]	23 [22-25]
Zimbabwe	2015 DHS	71 [68-73]*	63 [61-66]*
Zimbabwe	2010-11 DHS	60 [57-64]	56 [54-58]

M CPR, modern contraceptive prevalence rate; DHS, Demographic and Health Survey; MICS, Multiple Indicator Cluster Surveys.

contraceptive use in rural and urban areas increased in most countries. Increases were significant in seven countries—Burundi, Ethiopia, and Uganda in rural settings, and in Malawi, Senegal, Sierra Leone, and Zimbabwe in both rural and urban settings. In three countries, MCP declined among rural women between surveys: Haiti, Nepal, and Pakistan, though the decline was not significant. In both Pakistan and Nepal, MCP among urban women also declined between surveys. The largest gain among rural women was seen in Malawi where MCP increased by 17% between 2010 and 2016. [Figure 3](#) illustrates the change in MCP between two surveys.

Education

[Table 4](#) shows the MCP stratified by education status between two surveys and [Figure 4](#) illustrates the same information

visually. In six of the 11 countries there were significant changes in MCP between surveys related to education: Burundi, Ethiopia, Malawi, Senegal, Sierra Leone, and Uganda. In all six countries, gains in modern contraceptive use were made among women with no education. In five of six countries—Burundi, Malawi, Senegal, Sierra Leone, and Uganda, significant MCP gains were also made among women with primary education. In Malawi and Sierra Leone, MCP gains among women with secondary education were also significant. The proportion of women with no education declined between two surveys in four of the six countries (and not in Ethiopia or Sierra Leone). Malawi had the fastest MCP growth where it grew by more than 16% among women with no education. Modern use remained stagnant (i.e. change was not statistically significant) among women in the highest education group in most countries except in Sierra Leone where it increased. Note, in Sierra Leone, the highest education category includes secondary and higher education, while in other countries those categories are separate. Among women in the highest education group, traditional method use increased in Burundi and Uganda by more than one percentage point. Further analysis is needed to discern if women in the highest education group in Burundi and Uganda discontinued a modern method for a traditional method or have been long-term traditional method users.

Age

[Table 5](#) provides MCP by age group for all the countries. When comparing changes in MCP in individual age groups between surveys, we found that any statistically significant MCP increases were consistent for both married women and all women^{iv}. When comparing MCP increase by age groups between two surveys, we found no significance for four countries: Bangladesh, Haiti, Nepal, and Pakistan; significance in some age groups for Burundi, Ethiopia, and Zimbabwe; and significance in all age ranges for Malawi and Senegal. In Uganda and Sierra Leone, all age groups (except 45–49) saw a statistically significant increase in MCP use. The age group 20–24 showed significance across three of the countries, Burundi, Malawi, and Senegal, while Ethiopia showed significance for 25–29 years old and 40–44 years old. In Zimbabwe, the only age groups not showing significant change were the youngest two groups: 15–19 and 20–24-year-olds.

Unmarried sexually active^v

We also assessed whether there had been an increase in MCP among unmarried sexually active women. Typically, the sample of women that are unmarried and sexually active in the last 30 days is small which makes testing for significant changes in MCP challenging (since a larger sample increases confidence in our estimates and the confidence intervals are tighter allowing

^{iv} This does not apply to countries with ever-married samples, including Bangladesh and Pakistan. For both Pakistan and Bangladesh, the analysis is only reflective of married women.

^v This does not apply to countries with ever-married samples, including for Bangladesh and Pakistan. Unmarried sexually active are women that are not-in-union nor married and were sexually active in the last month.

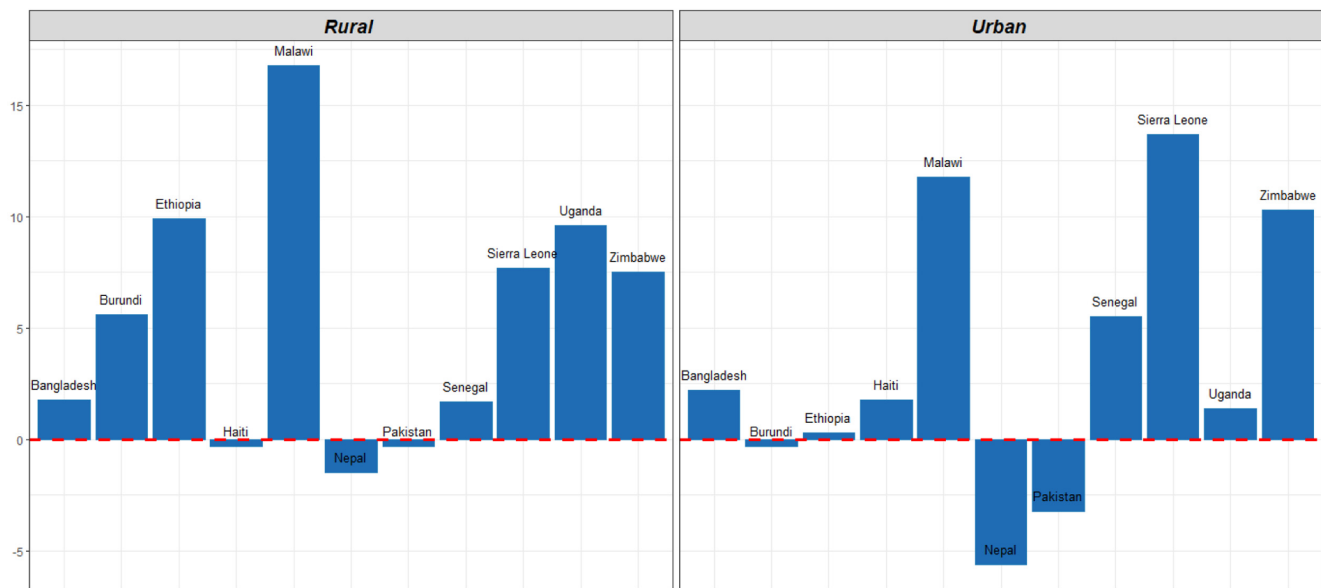


Figure 3. Change in modern contraceptive prevalence rate (MCPR) by residence between two surveys.

Table 4. MCPR by education by country with significant MCPR increase denoted by * next to most recent survey estimate confidence interval.

Country	Survey	No education	Primary	Secondary	Higher
Bangladesh	2014 DHS	51 [48-53]	55 [53-57]	55 [54-57]	54 [51-57]
Bangladesh	2011 DHS	50 [48-52]	52 [51-54]	53 [51-54]	54 [51-57]
Burundi	2016-17 DHS	20 [19-22]*	25 [23-27]*	29 [26-32]	22 [15-31]
Burundi	2010 DHS	14 [13-16]	20 [18-22]	34 [29-39]	33 [23-46]
Ethiopia	2016 DHS	31 [28-34]*	39 [35-43]	51 [45-56]	51 [44-57]
Ethiopia	2011 DHS	22 [19-24]	34 [31-37]	53 [46-61]	57 [50-64]
Haiti	2016-17 DHS	28 [25-31]	33 [31-36]	33 [31-36]	27 [21-34]
Haiti	2012 DHS	28 [25-31]	32 [30-34]	33 [31-36]	31 [25-38]
Malawi	2015-16 DHS	54 [51-56]*	59 [58-60]*	59 [56-61]*	55 [49-62]
Malawi	2010 DHS	37 [35-40]	42 [41-44]	48 [46-51]	49 [39-60]
Nepal	2016 DHS	52 [49-54]	42 [39-45]	34 [32-37]	33 [31-36]
Nepal	2011 DHS	49 [46-52]	41 [37-44]	37 [34-40]	35 [30-40]
Pakistan	2017-18 DHS	23 [22-25]	29 [26-32]	30 [28-33]	30 [27-33]
Pakistan	2012-13 DHS	22 [20-23]	28 [25-32]	27 [25-30]	30 [27-34]
Senegal	2017 DHS	22 [20-23]*	34 [31-36]*	31 [27-34]	42 [33-51]
Senegal	2012 DHS	12 [10-13]	25 [21-28]	27 [21-34]	49 [30-68]
Sierra Leone ^{^/^^}	2017 MICS	18 [18-20]*	27 [24-30]*	32 [29-36] *	
Sierra Leone ^{^^}	2011 MICS	7 [6-8]	14 [12-17]	23 [21-26]	
Uganda	2016 DHS	23 [20-26]*	34 [33-36]*	40 [38-43]	43 [39-47]

Country	Survey	No education	Primary	Secondary	Higher
Uganda	2011 DHS	16 [13-19]	25 [23-27]	36 [33-40]	45 [38-51]
Zimbabwe	2015 DHS	49 [37-62]	61 [57-64]	68 [66-69]	75 [70-80]
Zimbabwe	2010-11 DHS	42 [34-51]	53 [50-56]	60 [58-62]	67 [59-73]

^ No education includes some pre-primary education and ^ secondary includes secondary and higher
MCPR, modern contraceptive prevalence rate; DHS, Demographic and Health Survey; MICS, Multiple Indicator Cluster Surveys.

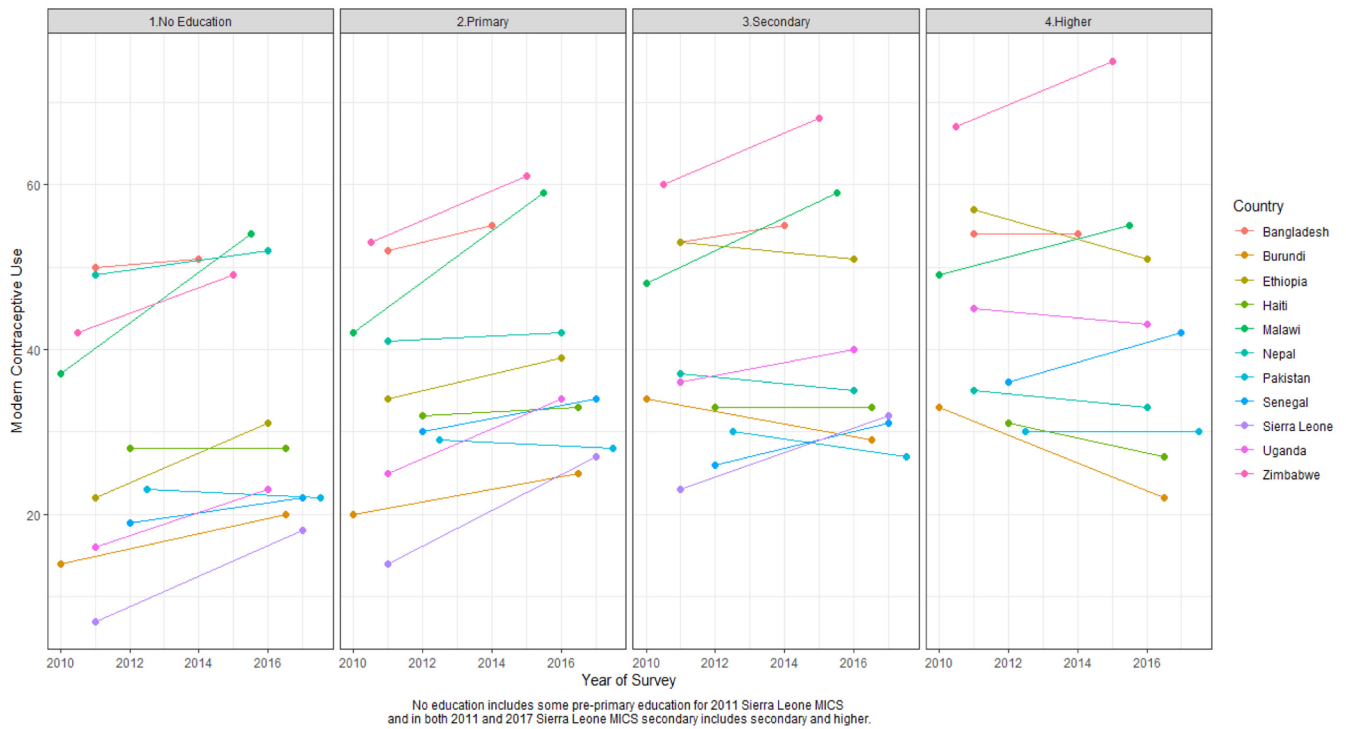


Figure 4. Modern contraceptive prevalence rate (MCPR) by education status between two surveys MICS, Multiple Indicator Cluster Surveys. Per panel, each country has two MCPR estimates connected by a line. One MCPR estimate is from the earlier survey and one estimate is from the later survey. Each panel represents the education level from no education to higher education. The color of the line signifies the country. For example, looking at the panel for the no education group, in Zimbabwe, MCPR among women with no education increased between two surveys.

for detectable changes). While none of the findings were significant, we did see an increase in modern method use in Malawi and Zimbabwe.

Discussion

A criticism of the “120 million additional users” goal of the FP2020 partnership had been that countries and partners might prioritize easier to reach populations (e.g. with technical or political support from the FP2020 partnership) to meet this target, which exacerbates inequities. Overall, our findings suggest that between two surveys carried out since 2010, many countries saw MCP gains across different dimensions of equity,

including residence, education, wealth, age, and marital status and do not suggest a focus on expanded coverage at the expense of equity. In most countries, MCP increased among rural women, and these gains were significant in seven African countries. In six countries, MCP gains were significant both among women with no education and in the lowest wealth group. MCP gains among young women aged 20–24 were seen in four African countries: Malawi, Senegal, Sierra Leone, and Uganda. In these four countries, MCP also significantly increased among young women aged 15–19. While we could not detect significant MCP changes among unmarried sexually active women, the country-specific trends indicate MCP is increasing

Table 5. Age groups by country with significant MCPR increase denoted by * next to most recent survey estimate confidence interval.

Country	Survey	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Bangladesh	2014 DHS	46 [43-48]	54 [51-56]	60 [58-62]	62 [60-64]	56 [54-59]	41 [38-43]	21 [19-24]	51 [50-52]
Bangladesh	2011 DHS	41 [39-44]	52 [50-54]	58 [56-60]	58 [56-60]	53 [50-55]	41 [39-44]	25 [23-28]	49 [48-50]
Burundi	2016-17 DHS	3 [2-3]	15 [14-17]*	20 [19-22]	22 [20-24]	21 [19-23]	16 [14-19]	10 [8-12]	15 [14-15]*
Burundi	2012 DHS	1 [1-2]	12 [10-14]	18 [16-20]	18 [15-21]	16 [14-19]	12 [10-14]	7 [5-10]	11 [10-12]
Ethiopia	2016 DHS	7 [6-9]	26 [23-29]	35 [32-38]*	35 [31-38]	29 [26-33]	28 [24-32]*	16 [13-21]	25 [23-27]*
Ethiopia	2011 DHS	5 [4-6]	22 [19-25]	26 [23-28]	28 [25-31]	26 [23-29]	19 [15-23]	10 [8-13]	19 [17-20]
Haiti	2016-17 DHS	8 [7-9]	25 [23-27]	31 [29-34]	30 [27-33]	29 [26-32]	24 [21-27]	13 [11-15]	22 [21-23]
Haiti	2012 DHS	8 [7-10]	23 [21-26]	31 [29-34]	31 [28-34]	28 [24-31]	22 [20-25]	14 [11-16]	22 [20-23]
Malawi	2015-16 DHS	15 [14-17]*	46 [44-48]*	57 [54-59]*	60 [58-62]*	59 [57-62]*	53 [50-56]*	43 [40-47]*	45 [44-46]*
Malawi	2010 DHS	9 [8-10]	33 [31-35]	42 [40-44]	42 [40-45]	44 [42-47]	40 [37-43]	33 [30-36]	33 [32-34]
Nepal	2016 DHS	4 [3-5]	18 [16-20]	34 [31-37]	46 [42-49]	56 [53-59]	55 [52-58]	52 [48-56]	33 [32-35]
Nepal	2011 DHS	4 [3-5]	18 [16-21]	36 [33-40]	50 [47-54]	57 [54-61]	56 [53-60]	44 [40-49]	33 [32-35]
Pakistan	2017-18 DHS	6 [4-9]	13 [11-16]	21 [18-23]	29 [27-32]	31 [29-34]	34 [31-37]	24 [22-29]	24 [23-26]
Pakistan	2012-13 DHS	7 [4-10]	15 [13-17]	21 [19-23]	31 [28-34]	35 [32-38]	31 [27-34]	24 [21-27]	25 [24-26]
Senegal	2017 DHS	3 [2-3]*	14 [12-15]*	23 [21-25]*	29 [26-31]*	31 [28-35]*	29 [26-32]*	21 [18-24]*	19 [18-20]*
Senegal	2012 DHS	1 [1-2]	8 [7-10]	16 [14-19]	16 [13-20]	22 [18-27]	18 [14-23]	9 [6-12]	11 [10-13]
Sierra Leone	2016 MICS	20 [19-22]*	33 [31-36]*	31 [28-33]*	28 [26-30]*	25 [23-27]*	19 [17-21]*	11 [9-13]	26 [24-27]*
Sierra Leone	2010 MICS	5 [3-7]	9 [7-11]	9 [7-11]	12 [10-14]	14 [12-16]	11 [9-14]	7 [5-10]	10 [9-11]
Uganda	2016 DHS	9 [8-11]*	28 [26-30]*	37 [35-40]*	37 [34-39]*	36 [34-39]*	34 [31-37]*	19 [17-22]	27 [27-28]*
Uganda	2011 DHS	6 [5-7]	20 [18-22]	28 [25-31]	30 [27-34]	30 [27-34]	27 [23-31]	14 [11-18]	21 [20-22]
Zimbabwe	2015 DHS	12 [11-14]	49 [46-52]	62 [59-65]*	66 [64-68]*	64 [61-67]*	56 [53-60]*	42 [37-47]*	48 [47-49]*
Zimbabwe	2010-11 DHS	10 [9-12]	44 [41-47]	55 [52-58]	55 [52-58]	52 [49-55]	45 [41-50]	31 [28-35]	41 [39-42]

This table represents an all women sample and an ever-married women sample in Pakistan and Bangladesh.

MCPR, modern contraceptive prevalence rate; DHS, Demographic and Health Survey; MICS, Multiple Indicator Cluster Surveys.

among these women. All of the significant gains in MCP were made in African countries, and specifically Malawi, who experienced the most expansive growth across different dimensions of equity.

Another possible criticism of the “120 million additional users” goal could be that the target would lead to a focus on more populous countries, but most of the gains in MCP were in African countries with populations far smaller than the those of several of the Asian countries in our sample. Both Pakistan and Bangladesh rank in the top 10 most populous countries in the world. Yet, our analysis found that despite having larger populations, neither of these countries experienced the rapid MCP growth of several of the smaller countries.

Compared to these Asian countries, most of the African countries in our analysis started at a lower MCP and thus had greater potential for increased modern contraceptive use. However, it is worth noting Pakistan had more room to grow than Malawi, who experienced the most overall MCP growth and saw growth across different equity dimensions. Additionally, given all countries in our analysis are still experiencing population growth and thus an increasing population of women of reproductive age, even countries such as Bangladesh, Nepal, and Pakistan, that did not have significant levels of MCP growth, were providing contraceptive services to a greater number of women of reproductive age without experiencing declines in equity.

Given that countries could either experience (a) rapid MCP growth (because they started at a lower MCP in the middle of the S-curve growth pattern²¹) or (b) sustained modern contraception users (meaning they continue to add more users of modern contraception due to population growth and a slower increase in MCP), supportive country-specific policies and commitments that focused on expanding services and improving equity could be at the nexus of increasing and/or retaining modern contraceptive users without exacerbating inequities. In order to sustain its high MCP, government and development partners in Bangladesh successfully focused on geographic inequities; both the Sylhet and Chittagong divisions had the lowest MCP in 2011 and saw significant increase in the 2014 DHS, and further saw gains in the 2019 MICS (2 years after Bangladesh updated its policy to improving family planning services in these two divisions²²). Similarly, Malawi successfully prioritized young people in its commitments and policies. In fact, Malawi was one of four countries where MCP gains among the youngest women of reproductive age (15–19) were significant. Malawi also had the largest MCP gain among women with no education – at over 16%^{23–25}.

As the family planning community begins to look ahead to the FP2030 partnership, this analysis can help inform the emerging FP2030 family planning framework, which includes equity as a guiding principle²⁶. Helping family planning stakeholders understand whether the ambitious goal of the FP2020 partnership impacted equity will be critically important in determining how to establish goals and operationalize equity in the future family planning partnership. From our findings,

we interpret the impact of the FP2020 partnership on equity to be positive or at a minimum neutral, and do not see signs of exacerbated inequality within countries. Countries engaged with the partnership through country-specific commitments, and those that set country-specific priorities to reduce inequitable access to modern contraceptive counseling and services, as well as allocated resources towards equity-tailored programming, reaped the benefits.

While our analysis provides policy-relevant findings for the next family planning partnership, it had some limitations that should be noted. With our analysis confounding is likely and while regression approaches can mitigate against confounding, our aim was not to discern socio-demographic specific effect sizes or confirm associations. For example, our main objective was not to understand how different socio-demographic factors such as being wealthy versus poor increase the odds or probability of modern contraceptive use. Our primary objective was to understand if MCP significantly increased across different dimensions of inequities between two surveys, and a simple weighted bivariate analysis sufficed. Furthermore, with a simpler methodological approach (which is also more conservative in testing for significance), interpretability of findings is greater. Moreover, another limitation to our approach is that we did not include a counterfactual analysis where we assessed growth in MCP across equity dimensions in countries that were non-FP2020 commitment-making countries. While this would have allowed us to discern some differences in growth in MCP across equity dimensions between FP2020 and non-FP2020 commitment-makers, it was beyond the scope of our main objectives. Furthermore, we could not assess the impact of family planning programs on the growth in MCP across equity dimensions and across different countries because of the lack of available comparable data in the 11 countries we reviewed. Similarly, we could not evaluate the women’s experience in the health system or a family planning program’s ability to provide her with her preferred method; these are also critical to review when evaluating equitable growth in MCP and should be reviewed when data are available.

Additionally, household surveys such as the MICS and DHS are not powered to detect significant changes among a relatively small portion of unmarried, married sexually active women; if changes among this sub-population of women are of special interest for family planning programming, other methods need to be employed to more precisely estimate their modern contraceptive use. Furthermore, in some countries the proportion of women in “no education” or “poorest” groups declined over time. It’s unclear whether this aided countries in providing family planning services to these groups. Our analysis does not address this. Moreover, a few countries saw declines in modern contraceptive use among the most advantaged populations; however, it is important to note these changes between the surveys were not significant.

This analysis addresses if FP2020’s overall “120 million additional users” goals led to the prioritization of easier to reach populations and exacerbated inequities; our findings can be used

to inform the FP2030 partnership and reinforce that country-specific commitments, policies, and programming is likely to have the largest net effect on increasing or retaining modern contraceptive users and leaving no one behind.

Data availability

Underlying data

DHS

Data used in this study are from the HR and IR datasets of the Bangladesh 2014 and 2011 DHS; the HR and IR datasets of the Burundi 2016–17 and 2012 DHS; the HR and IR datasets of the Ethiopia 2016 and 2011 DHS; the HR and IR datasets of the Haiti 2016–17 and 2012 DHS; the HR and IR datasets of the Malawi 2015–16 and 2012 DHS; the HR and IR datasets of the Nepal 2016 and 2011 DHS; the HR and IR datasets of the Pakistan 2017–28 and 2012–23 DHS; the HR and IR datasets of the Senegal 2017 and 2012 DHS; the HR and IR datasets of the Uganda 2016 and 2011 DHS; and the HR and IR datasets of the 2015 and 2010–11 Zimbabwe DHS, available from the [DHS website](#). Access to the dataset requires registration and is

granted only for legitimate research purposes. A guide for how to apply for dataset access is available at: <https://dhsprogram.com/data/Access-Instructions.cfm>.

MICS

Data used in this study are from the households (HH) and women (WM) datasets of the Sierra Leone 2010, 2016, MICS, available from the [MICS website](#). Access to the dataset requires registration and is granted only for legitimate research purposes. Questions about data access can be directed to mics@unicef.org.

Extended data

Analysis code available from: <https://github.com/familyplanning2020/NOLB/tree/v1.0>

Archived analysis code at time of publication: <https://doi.org/10.5281/zenodo.5075758>²⁷.

License: [GNU General Public License](#).

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 **Linnea A Zimmerman** 

Department of Population, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

Thank you for the opportunity to review. My comments are largely minor and for the purpose of clarification. My most significant critique is in point 1 below, as it is not clear to me why authors did not explicitly show differences across most/least advantaged over time. Overall, however, the paper is well-written and contributes to relevant discussions related to equity.

1. While the authors do cite relevant literature, I think reference to the Choi and Fabric article "Monitoring Progress in Equality for the Sustainable Development Goals..."¹ noted below could help support introduction and discussion given their initial exploration of inequalities. I also think that Choi and Fabric's methodology (i.e. testing the differences between the most and least advantaged groups) could be replicated here. While authors show how MCP has changed across different groups, they don't actually show whether the difference between those groups has changed over time (though one can extrapolate). If you are not going to explicitly show how differences across groups has changed, at least justify why such an approach was not chosen.
2. Regarding wealth categories, I was not clear on whether these quintiles were defined cross-country or within country. For example, if women were in the poorest households, were these the poorest within their own country or the poorest across all countries? I assume the latter but a slight clarification would make this more clear.
2. Figure 1 - Rather than have two colors differentiating older/later surveys could authors differentiate each country with color/symbol combinations? I think this would make interpretation easier and faster.
3. Figure 2- I applaud the authors creativity in finding a way to visualize quite a bit of information. On the whole I like the chart, but did find some sections where I could not find countries across time. For example Nepal/older in panel 3. If Nepal older is the turquoise dot near Malawi, what is the purple dot? Would the addition of shapes help? Defer to the authors but think a critical review

is necessary to make sure the changes in all countries can be easily located in each panel.

4. Very minor change - suggest rewording "Increases were significant in seven countries– Burundi, Ethiopia, and Uganda in rural settings" to "Increases in rural settings were significant in seven countries– Burundi, Ethiopia, and Uganda"

5. Is it possible to show change in education status, similar to what you did for wealth, to demonstrate both how mcp use has changed and how education status has changed? Fine if not, but it seems like it would compliment the wealth analysis.

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[PubMed Abstract](#) | [Publisher Full Text](#)

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Family planning, demography, survey analysis

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 08 February 2022

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Shawn Malarcher

United States Agency for International Development, Washington, DC, USA

Thanks for your careful consideration of my feedback. I found the graphics much improved. Please ensure that men are included when considering contraceptive choice.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: family planning, social science research, KM, research translation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

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**Jamaica Corker**

The Bill & Melinda Gates Foundation, Seattle, WA, USA

This paper seeks to answer several critical questions on the impact of FP2020's goal of 120 million additional users ("120x20"), specifically whether certain groups of women were systematically left behind. I believe it makes an important contribution by providing an early indication that groups of women who are generally disadvantaged do not appear to have been left behind in FP2020 commitment countries.

However, I think this is fundamentally different from questions around equity. As I see it, this paper's contribution is not as the definitive answer to the elusive "equity" question in FP but rather to ascertain whether data from a select set of commitment countries indicates that progress under FP2020 exacerbated gaps in use between advantaged and disadvantaged groups. While it is difficult to draw many clear conclusions from this analysis (as nearly all results are inconsistent across countries), the results presented indicate that among FP2020 commitment countries there were not systematically greater MCP gains by the most advantaged women. This is a substantial finding that is almost buried under discussions about equity, programs and policies to which the data used does not directly speak. To strengthen this paper and to make the results and interpretation more robust, I suggest the authors stick more closely to the stated and important goal of ascertaining whether "increases in mCPR did not vary significantly in more disadvantaged groups" since the 2012 London Summit.

Detailed feedback:

1. I suggest the authors focus the scope of this analysis and interpretation more specifically on the contraceptive use (or demand satisfied – see point #3) outcomes they can directly measure with DHS and MICS data used here. Though the authors say "we examine FP2020 country data and policies for signs of inequity" the data and methods in this paper do not allow it to comment directly on the *focus of programs or policies*. Such an analysis would require more comprehensive (not just selective) data on programmatic and policy decisions, with adequate lag time for analysis.
2. I question the appropriateness of MCP growth for this analysis. Without some underlying or contextual measure of demand or access, using MCP alone to measure equity implies that there is some ideal level of MCP across all populations – and the higher, the better (in contradiction to the FP2020 principles of agency and autonomy referenced). Could the authors look at changes in demand satisfied, arguably a more appropriate measure of equity given the different underlying levels of demand for contraception among population sub-groups? Flawed though unmet need is as a direct measure of demand for contraception, including it as a backdrop here (via demand satisfied) would better contextualize "equitable" FP changes.
 - If the authors choose to stick with MCP change, this should be more clearly addressed as an (acceptable) limitation. It would also be good to better contextualize demand/unmet need in the context of the FP2020 goal (i.e., the 120x20 goal was devised against the backdrop of more than 230 million women with unmet need) and in interpreting the results.
3. The paper is fundamentally asking about the impact of the FP2020 initiative, but there is no counterfactual or contextual information about what differential mCPR growth looked like

prior to FP2020, nor a recognition of the limitation of comparing two-point estimates, especially among sometimes small sub-groups. FP2020 shifted our field to track progress using model-based estimates from FPET to overcome limitations of tracking changes between two surveys. Did the authors consider a modified FPET to see to what degree different sub-groups in countries followed or outperformed the pre-FP2020 trajectories that would have been expected?

4. The question of whether some women (e.g., the poor or those with no education) are systematically left behind is different from questions of equity. The question of how to define and measure equity in the context of FP programs is one the field continues to struggle with. I am not convinced that the authors' definition of "equitable" gains as those that are equal to or larger among a more "disadvantaged" group suffices, as this implies an underlying goal of having consistent levels or contraceptive use across all sub-groups/dimensions of equity (regardless of demand). Likewise, is it "equitable" if any groups show slower growth or declines in MCP (as we see evidence from this analysis with some more advantaged groups)? And given starting differential in MCP across sub-groups in many countries, might we expect growth to be slower or faster depending on their placement along the s-curve? While this paper cannot answer those or all questions around the definition of equity in FP programming, it can be clearer about when it is commenting about MCP gains among groups that are generally disadvantaged with FP outcomes (e.g., the poor, less educated, youth) versus the more elusive concept of equity.
5. The utility of using the International Wealth Index in place of the country-specific wealth measures (e.g., DHS quintiles) is not clear to me, given that countries are the unit of analysis. The shifts in population composition with the IWI measure seems more relevant for examining the relationship between absolute levels of wealth and contraceptive use or for understanding compositional influences on changes in MCP, but not necessarily for analyzing whether *within each country* women who are relatively poorer or wealthier appeared to be disadvantaged by policies related to the FP2020 goal. Though I find this analysis interesting, I don't think it is necessary or that it strengthens the findings.
6. It appears that a handful of other long-term FP2020 commitment countries have DHS surveys that have two surveys between 2010 and 2019 were not included (Benin, Cameroon, Guinea and Mozambique, to name a few). If the inclusion criteria are more selective than mentioned (e.g., if one survey has to be prior to 2012), that should be specified. Alternatively, if some eligible countries were overlooked for this analysis, including them would make the findings more robust.
7. Is there a reason for using the Bangladesh 2014 DHS and not the 2017-18 survey? Unless there is a compelling reason related to the data, using the 2017-18 survey instead will provide a longer time lapse to better measure cumulative influence of FP2020.
8. The selective citing of policies related to increases in MCP among certain groups (e.g., Malawi's focus on youth) distracts from the overall finding/message (that FP2020 commitments, as they were applied within countries, did not seem to exacerbate inequalities writ large). These policies are also cited inconsistently – e.g., credited for MCP gains among Malawi youth but no such policy is cited for the substantial gains among Malawi's uneducated women – and thus come across as selective.

9. I generally found the graphics challenging to read and interpret, with the key messages not clearly represented visually. Perhaps fewer and simpler graphics could better convey the main findings.
10. I'd like more discussion about implications of the findings that some advantaged groups have experienced MCP stagnation or declines. Does this imply an inequitable focus on these groups, suggesting further declines among these groups under the FP2020 "equity" approach? Unlikely, but this could still have implications about how the FP2030 defines equity moving forward. After reinforcing their message that in its aim of reaching 120 million additional users FP2020 does not seem to have widened the use gap between advantaged and disadvantaged women, I'd encourage the authors to give a bit more consideration to their findings on MCP declines among several more advantaged groups and the implications this might have for FP2030.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Fertility, family planning, demography

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 21 Dec 2021

Shiza Shiza

Overall, we found your feedback to be incredibly helpful. Thank you for taking the time to make comments. Specific questions are addressed below.

1. I suggest the authors focus the scope of this analysis and interpretation more specifically on the contraceptive use (or demand satisfied – see point #3) outcomes they can directly measure with DHS and MICS data used here. Though the authors say “we examine FP2020 country data and policies for signs of inequity” the data and methods in this paper do not allow it to comment directly on the *focus of programs* or *policies*. Such an analysis would require more comprehensive (not just selective) data on programmatic and policy decisions, with adequate lag time for analysis.
 - We agree we would need additional data to discuss how program and policies impacted MCPR gains. Hence why it is not a focus of this paper and we removed any references to this. Thank you for the thorough check.

2. I question the appropriateness of MCP growth for this analysis. Without some underlying or contextual measure of demand or access, using MCP alone to measure equity implies that there is some ideal level of MCP across all populations – and the higher, the better (in contradiction to the FP2020 principles of agency and autonomy referenced). Could the authors look at changes in demand satisfied, arguably a more appropriate measure of equity given the different underlying levels of demand for contraception among population sub-groups? Flawed though unmet need is as a direct measure of demand for contraception, including it as a backdrop here (via demand satisfied) would better contextualize “equitable” FP changes. If the authors choose to stick with MCP change, this should be more clearly addressed as an (acceptable) limitation. It would also be good to better contextualize demand/unmet need in the context of the FP2020 goal (i.e., the 120x20 goal was devised against the backdrop of more than 230 million women with unmet need) and in interpreting the results.
 - We opted to use MCPR because unmet need does not reliably follow a decreasing or increasing pattern. In fact, unmet need can increase in a country when demand for family planning is generated which would be difficult to quantify with population-based surveys like the DHS. Furthermore, demand satisfied is also a complex indicator which assumes that women’s demand is “satisfied” with the method that they are using. To avoid these issues, we opted to use a widely understood and used indicator of MCPR. This rationale was added in the method section.

3. The paper is fundamentally asking about the impact of the FP2020 initiative, but there is no counterfactual or contextual information about what differential MCPR growth looked like prior to FP2020, nor a recognition of the limitation of comparing two-point estimates, especially among sometimes small sub-groups. FP2020 shifted our field to track progress using model-based estimates from FPET to overcome limitations of tracking changes between two surveys. Did the authors consider a modified FPET to see to what degree different sub-groups in countries followed or outperformed the pre-FP2020 trajectories that would have been expected?
 - We noted the limitation of not using regression approaches and using a simple bivariate analysis. On FPET, it is currently only set up to be used at the sub-national and national level. It cannot be tailored for different sub-populations in its current form.

4. The question of whether some women (e.g., the poor or those with no education) are systematically left behind is different from questions of equity. The question of how to define and measure equity in the context of FP programs is one the field continues to struggle with. I am not convinced that the authors' definition of "equitable" gains as those that are equal to or larger among a more "disadvantaged" group suffices, as this implies an underlying goal of having consistent levels or contraceptive use across all sub-groups/dimensions of equity (regardless of demand). Likewise, is it "equitable" if any groups show slower growth or declines in MCP (as we see evidence from this analysis with some more advantaged groups)? And given starting differential in MCP across sub-groups in many countries, might we expect growth to be slower or faster depending on their placement along the s-curve? While this paper cannot answer those or all questions around the definition of equity in FP programming, it can be clearer about when it is commenting about MCP gains among groups that are generally disadvantaged with FP outcomes (e.g., the poor, less educated, youth) versus the more elusive concept of equity.
 - We discuss the issues of countries starting at different levels of MCPR in the discussion section.
1. The utility of using the International Wealth Index in place of the country-specific wealth measures (e.g., DHS quintiles) is not clear to me, given that countries are the unit of analysis. The shifts in population composition with the IWI measure seems more relevant for examining the relationship between absolute levels of wealth and contraceptive use or for understanding compositional influences on changes in MCP, but not necessarily for analyzing whether *within each country* women who are relatively poorer or wealthier appeared to be disadvantaged by policies related to the FP2020 goal. Though I find this analysis interesting, I don't think it is necessary or that it strengthens the findings.
 - You cannot compare DHS or MICS wealth quintiles across time even within country. Since the wealth index is based on a principal components analysis for each survey, it makes it incomparable across time even in the same country.
2. It appears that a handful of other long-term FP2020 commitment countries have DHS surveys that have two surveys between 2010 and 2019 were not included (Benin, Cameroon, Guinea and Mozambique, to name a few). If the inclusion criteria are more selective than mentioned (e.g., if one survey has to be prior to 2012), that should be specified. Alternatively, if some eligible countries were overlooked for this analysis, including them would make the findings more robust.
 - We only included surveys that were released by June 2019.
3. Is there a reason for using the Bangladesh 2014 DHS and not the 2017-18 survey? Unless there is a compelling reason related to the data, using the 2017-18 survey instead will provide a longer time lapse to better measure cumulative influence of FP2020.
 - We only included surveys that were released by June 2019 and the Bangladesh 2017-18 had not been released by June 2019.
4. The selective citing of policies related to increases in MCP among certain groups (e.g.,

Malawi's focus on youth) distracts from the overall finding/message (that FP2020 commitments, as they were applied within countries, did not seem to exacerbate inequalities writ large). These policies are also cited inconsistently – e.g., credited for MCP gains among Malawi youth but no such policy is cited for the substantial gains among Malawi's uneducated women – and thus come across as selective.

- On the first point, the overall focus of the paper is to assess if FP2020's 120 million goal exacerbated inequities in countries. The focus of the paper is not on the country commitments themselves. We use the Malawi example to show that countries focused on implementing policies that supported reducing inequities.
- On the second point, we cited that Malawi prioritized youth access to family planning in their National Friendly Health Services Strategy 2015-2020. The same policy also highlights the importance of education and prioritizing educational attainment among adolescent girls – we just did not cite this directly in the paper.

5. I generally found the graphics challenging to read and interpret, with the key messages not clearly represented visually. Perhaps fewer and simpler graphics could better convey the main findings.

- We have added interpretation to the wealth and education graphics.

6. I'd like more discussion about implications of the findings that some advantaged groups have experienced MCP stagnation or declines. Does this imply an inequitable focus on these groups, suggesting further declines among these groups under the FP2020 "equity" approach? Unlikely, but this could still have implications about how the FP2030 defines equity moving forward. After reinforcing their message that in its aim of reaching 120 million additional users FP2020 does not seem to have widened the use gap between advantaged and disadvantaged women, I'd encourage the authors to give a bit more consideration to their findings on MCP declines among several more advantaged groups and the implications this might have for FP2030.

- The changes in modern contraceptive use among the most advantage groups (e.g. most education, richest, oldest, urban) were not significant. We have added this note into the discussion.

Competing Interests: No competing interests were disclosed.

Reviewer Report 12 August 2021

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**Shawn Malarcher**

United States Agency for International Development, Washington, DC, USA

The article analyzes survey data to examine the question of how well countries have performed in reducing inequities in FP.

My responses "partly" are due to areas where the analysis was unclear or difficult to follow (see comments below).

I applaud the authors on this important review of FP programs. This is an important analysis and should help drive the next generation of support. While the authors reference important work in this area, it will be important to recognize explicitly a few key points:

1. While MCPR is a useful measure for this exercise, it does not provide the full picture of equity in FP. For example, unmet need for contraception may provide a better measure at how well programs are meeting demand. Likewise, MCPR does not capture client experience or the ability of the system to provide a preferred method. For purposes of this analysis, I agree MCPR works well, however, I suggest the authors acknowledge this limitation.
2. The current version is a high quality academic paper. It would be helpful to include some recognition that inequities are a result of the system's inability to serve the needs of particular communities. These differences mark important differences in power structures and resource allocation.
3. Following the point above, in countries where the equity gaps has shrunk, it would be helpful to acknowledge that this is due to the program's ability to shift these power and resource imbalances. They have been able to reshape programs to reflect the values and preferences in those communities where change has occurred. Systems are perfectly built to achieve the results they achieve (to change those results the system must change).
4. I have never seen MCP used. Is there a reason you aren't using MCPR?
5. In the methods section the authors refer to "cross country analysis", but I don't see any cross country comparisons. Please clarify.
6. Overall, I have a difficult time with the graphics. The data is grouped by characteristic rather than by country so it is difficult to see what changes are happening in a country. The wealth graphic Figure 2 is very complex and challenging to read. Why does Burundi have 2 bubbles in the poorest column? I like Table 1. This one is easy to read. It would be more interesting to present the diff in diff analysis.
7. I appreciate the reference and cut off according to confidence interval, but is there a way to include them in the paper?
8. I don't believe it is appropriate to compare the most vulnerable (poorest) with the most advantaged (wealthiest). I recommend focusing your analysis on comparing the most vulnerable to an index population (poorest with middle income), as you have done and drop the other analysis. This comparison is more appropriate in my view and could make the

figures and analysis easier to communicate. This is true for education and age as well.

9. The residential analysis doesn't reflect on shifts in demographics. Was there a significant shift in people from rural to urban settings?
10. I can't follow the finding on age. Please clarify. Did you limit the analysis to married women 15-19? Did you explore using sexually active 15-19 yrs olds?
11. The conclusion is a bit difficult to follow. It's not just about – were there any significant gains in vulnerable populations. What we want to see is that programs focused on these groups and we saw them "catch up". How did their gains compare with gains elsewhere? Perhaps you could start the conclusion with some general statements about which population groups saw the greatest increases in country (vulnerable or not) and then focus on the countries that show significant gains in reducing inequities.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: family planning, social science research, KM, research translation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 21 Dec 2021

Shiza Shiza

Overall, we found your feedback to be incredibly helpful. Thank you for taking the time to make comments. Specific questions are addressed below.

1. While MCPR is a useful measure for this exercise, it does not provide the full picture of equity in FP. For example, unmet need for contraception may provide a better measure at how well programs are meeting demand. Likewise, MCPR does not capture client experience or the ability of the system to provide a preferred method. For purposes of this analysis, I agree MCPR works well, however, I suggest the authors acknowledge this limitation.
 - We added additional information on this in the methods section where we discuss why we opted to use MCPR and then also added in the discussion section limitation of how our analysis is unable to provide an analysis on client experience or the ability of the system to provide a woman's preferred method.
2. The current version is a high quality academic paper. It would be helpful to include some recognition that inequities are a result of the system's inability to serve the needs of particular communities. These differences mark important differences in power structures and resource allocation.
 - We added in a note on how resource allocation and tailored programming towards reducing inequities is likely what allowed countries to grow MCPR.
3. Following the point above, in countries where the equity gaps has shrunk, it would be helpful to acknowledge that this is due to the program's ability to shift these power and resource imbalances. They have been able to reshape programs to reflect the values and preferences in those communities where change has occurred. Systems are perfectly built to achieve the results they achieve (to change those results the system must change).
 - We did not measure the impact of programs or resource allocation therefore we cannot assume that is what led to inequities shrinking. We did add a note about how resource allocation towards equity focused programs likely supported equitable growth in MCPR.
4. I have never seen MCP used. Is there a reason you aren't using MCPR?
 - We edited MCP to MCPR.
5. In the methods section the authors refer to "cross country analysis", but I don't see any cross country comparisons. Please clarify.
 - What was meant by cross country analysis is that you can compare change over time and across different countries.
6. Overall, I have a difficult time with the graphics. The data is grouped by characteristic rather than by country so it is difficult to see what changes are happening in a country. The wealth graphic Figure 2 is very complex and challenging to read. Why does Burundi have 2 bubbles in the poorest column? I like Table 1. This one is easy to read. It would be more interesting to present the diff in diff analysis.
 - All countries in the wealth graphic should have two bubbles. One bubble is for the earlier survey and the second bubble is for the later survey. We opted not to do a regression analysis (which would be a difference in difference analysis) and our reasoning added to the discussion section. We will add additional

notes that will help with the interpretation.

7. I appreciate the reference and cut off according to confidence interval, but is there a way to include them in the paper?
 - The confidence intervals are included in the paper. For interpretability of the findings, we opted to keep them in tables and not directly in text.
8. I don't believe it is appropriate to compare the most vulnerable (poorest) with the most advantaged (wealthiest). I recommend focusing your analysis on comparing the most vulnerable to an index population (poorest with middle income), as you have done and drop the other analysis. This comparison is more appropriate in my view and could make the figures and analysis easier to communicate. This is true for education and age as well.
 - We wanted to compare the most disadvantaged group to the least disadvantaged group because we wanted to assess if the most vulnerable (disadvantaged) were left behind while the most advantaged continued to progress. While we focus on these two groups in most of the analysis, we do calculate MCPR among all levels of the equity dimensions and those comparisons can be made by all readers by reviewing the tables.
9. The residential analysis doesn't reflect on shifts in demographics. Was there a significant shift in people from rural to urban settings?
 - We investigated this question, and we did not see any change in people moving from rural to urban settings in every country between surveys.
10. I can't follow the finding on age. Please clarify. Did you limit the analysis to married women 15-19? Did you explore using sexually active 15-19 yrs olds?
 - For the age analysis, the findings are for all women where possible. There is a separate analysis for unmarried sexually active women.
11. The conclusion is a bit difficult to follow. It's not just about – were there any significant gains in vulnerable populations. What we want to see is that programs focused on these groups and we saw them “catch up”. How did their gains compare with gains elsewhere? Perhaps you could start the conclusion with some general statements about which population groups saw the greatest increases in country (vulnerable or not) and then focus on the countries that show significant gains in reducing inequities.
 - We do start the conclusions with some general statements. Since we cannot measure direct program effect in this paper, we added a point in the discussion where we mention this has a limitation.

Competing Interests: No competing interests were disclosed.