Do fertility preferences contribute to explaining fertility stalls in sub-Saharan Africa? Evidence from 6 countries

– Preliminary version –

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Abstract

Although fertility in sub-Saharan Africa has decreased since the 1980s, it remains at high levels mainly due to the desire for large families, low levels of contraceptive use, and high unmet need for family planning. Even more, since the early 2000s slowdowns, halts and reversals in fertility decline have been observed in many countries. Our goal is to analyze whether fertility preferences and unmet need for contraceptives have contributed to the reversals and halts in fertility decline, specifically in those countries where strong evidence of fertility stalls has been found. We use information on 110,173 births from 27 DHS surveys collected in Cameroon, Congo, Kenya, Namibia, Zambia and Zimbabwe. We compare changes in fertility rates with trends in unmet need for family planning and contraceptive failure. We also decompose total fertility rates and age-specific fertility rates by fertility planning status, i.e., planned, mistimed, and unwanted. Finally, we propose some scenarios on unmet need levels to estimate fertility rates and examine whether any changes may have altered fertility trends and thus reversed the periods of stalled fertility. Our findings suggest that, since demand for children remains at high levels, fertility plateaus are mainly driven by wanted fertility, especially planned fertility. Reductions in unmet need for family planning could lead to lower fertility levels and, under certain circumstances, it is possible to prevent the emergence of fertility stalls. The scenarios show that not only access to contraceptives is important, but also their correct use.

Introduction

Sub-Saharan Africa (SSA) is the region with the highest fertility levels in the world. The literature agrees on two potential causes: high-fertility desires and low levels of contraceptive use (Bongaarts & Casterline, 2018). Women in Africa have historically had pronatalist behaviors (Caldwell et al., 1992), and the desired family size in SSA is still high, between 4 and 5 children (Bongaarts & Casterline, 2013; Casterline & Agyei-Mensah, 2017). Recent evidence shows that women in SSA are very likely to transform their fertility desires into fertility outcomes (Cleland et al., 2019). Thus, women's desire to have many children would lead to high fertility rates. Low contraceptive use partly stems from the high desired family size; however, levels of unmet demand for contraceptives are still high.

Fertility planning status refers to a woman's preference about the timing of the birth she has had. Thus, a birth can be categorized as planned, mistimed, or unwanted. Planned and mistimed are also defined together as wanted or desired births; in contrast, mistimed and unwanted births, are considered as unplanned or unintended births. Demand for children and fertility planning status are

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tightly connected. A recent study analyzes the distribution of fertility planning status by the desired family size in 53 countries, including a sample from SSA (Bongaarts & Casterline, 2018). The greater the desire to have more children, the greater the likelihood of considering the newborn as wanted. In contrast, the share of mistimed and unwanted births is higher among women wishing to have few children (Bongaarts & Casterline, 2018). Previously, some research argued that lowering the desired family size was the only pathway leading to significant declines in fertility (Pritchett, 1994). In this regard, country case and regional-level analyses in SSA find that reductions in wanted fertility explain declines in the total fertility rate (TFR) since the 1970s (Morgan & Rackin, 2010; Schoen et al., 1999; Westoff, 1990). Later, other research showed the important role of unintended births in fertility transitions. For instance, it has been shown that decreases in unwanted fertility would explain half of the TFR declines in SSA since the mid-1970s (Bongaarts, 1997; Casterline, 2017; Lam, 2011). Recent evidence harmonizes the previous findings and conclude that reductions in both desired and unintended fertility have contributed equally to fertility declines in SSA (Miller & Babiarz, 2016). Thus, meaningful decreases in fertility will only occur if the desire to have fewer children is accompanied by a reduction in unwanted fertility.

Contraceptive use makes it possible to match the desired number of children with the actual number of births. Contraceptive prevalence in SSA has doubled from 12.9% in 1990 to 27.8% in 2020, although it still remains at low levels (United Nations, 2021). Through the use of contraceptives, pregnancies can be spaced or stopped; therefore, all else being equal, increasing contraceptive use would lead to fewer unintended births (Bearak et al., 2018). Recent research finds evidence of a strong association between declining fertility and increasing contraceptive prevalence in a sample of 21 SSA countries (Finlay et al., 2018). Failures to space or limit childbearing are connected to unmet need for contraceptives, that is, women not being able to adequately satisfy their contraceptive use needs (WHO, 2020). In this regard, unmet need in SSA has barely reduced in the last 30 years, from 21% in the 1990s to 16.6% in recent years (United Nations, 2021). This could mean that, on the one hand, women still have limited access to contraceptives; while, on the other hand, women using contraceptives might be experiencing contraceptive failure. In either case, unmet need for contraceptives leads to unintended births and unfortunately these pregnancies are the most likely to result in adverse outcomes for mothers, such as labor market struggles, lower educational achievements or increased levels of household stress, and for newborns, such as low birth weight, prematurity or stillbirth (Gipson et al., 2008; Hindin et al., 2016). Also, pregnancies resulting from contraceptive failure are more likely to end in induced abortion, which is highly restricted and unsafe in SSA and a cause of maternal death (Bradley et al., 2011; Sánchez-Páez & Ortega, 2019; Sánchez-Páez & Ortega, 2021; Singh et al., 2018). Not only access to contraception matters but also its correct use.

Although fertility in SSA has declined since the early 1980s, it remains at high levels. Moreover, the decline has been at a much slower pace than in other low- and middle-income regions (Sánchez-Páez & Schoumaker, 2022). Desires for large families and ineffective ways of limiting childbearing are responsible for the high fertility and may be related to the slow decline in fertility rates (Casterline & Agyei-Mensah, 2017). Not only are many countries in SSA undergoing a longer than usual fertility transition, but some of them have also experienced halts and reversals in fertility decline. Fertility stalls in SSA were first identified in the early 2000s. Since then, over 25 countries have been classified under the stalled category at some point (Bongaarts, 2006; Ezeh et al., 2009; Garenne, 2008; Sánchez-Páez & Schoumaker, 2022; Schoumaker, 2019; Shapiro & Gebreselassie, 2008). However, recent research shows there is strong evidence of fertility stalls only in six

countries: Cameroon, Congo, Kenya, Namibia, Zambia and Zimbabwe (Schoumaker, 2019). Our interest is to focus on the particular case of these countries.

The underlying causes of fertility stalls remain unclear. As might be expected, evidence shows that declining fertility rates are linked to increases in contraceptive use (Finlay et al., 2018; Rossier & Corker, 2017; Shapiro et al., 2013). This would mean that if contraceptive prevalence falls or stagnates it should be reflected in plateauing fertility rates. However, the evidence is not conclusive in this regard. For instance, some studies find that decreases in contraceptive prevalence contribute to explain fertility stalls in countries like Cameroon, Ghana, Kenya, Mozambique, Namibia, or Zimbabwe (e.g., Bongaarts, 2006; Jadhav & Short Fabic, 2019; Nzimande & Mugwendere, 2018), while some other studies argue that stall periods in the same countries cannot be explained by changes in contraceptive use levels (e.g., Ezeh et al., 2009; Johnson et al., 2011; Shapiro & Gebreselassie, 2008). In some other countries, such as Tanzania and Zambia (Ezeh et al., 2009; Garenne, 2008; Johnson et al., 2011), fertility stalled in spite of the increasing contraceptive prevalence.

To our knowledge, there are no studies that directly relate unmet need and fertility stalls. The contribution of unmet need to fertility stalls has been analyzed indirectly from the fertility planning status, and even then, there is little evidence showing the role of wanted and unwanted fertility in slowdowns, halts and, reversals of fertility decline. Evidence shows that declines in wanted fertility, mainly due to drecreases in ideal family size, have contributed to lower fertility in Kenya, Namibia and Uganda (Blacker et al., 2005; Indongo & Pazvakawambwa, 2012). Conversely, it has been observed that wanted fertility increased or leveled off during periods of stalled fertility in Ghana, Kenya and Zimbabwe (Askew et al., 2017; Bongaarts, 2006; Nzimande & Mugwendere, 2018). On the other hand, increased unwanted fertility can be linked to stalled fertility in Ghana, Kenya, Tanzania, and Uganda (Askew et al., 2017; Ezeh et al., 2009). Further study of the reasons that have contributed to fertility stagnation is needed.

Our goal is to analyze whether fertility preferences and unmet need for family planning have contributed to reversals and halts in fertility decline, specifically in those countries where strong evidence of fertility stalls has been found. Since women still want large families, we would expect that non-declining wanted fertility might have led to periods of stalled fertility. Likewise, as unmet need for family planning has barely decreased over the last 30 years, we would expect that increases in either unmet need for spacing or unmet need for limiting might have contributed to fertility plateauing. Using the Demographic and Health Surveys (DHS), we compare changes in fertility rates with trends in unmet demand for family planning and contraceptive failure. We also decompose the TFR and age-specific fertility rates (ASFR) by fertility planning status. Finally, we propose some scenarios on unmet need levels to re-estimate fertility rates and examine whether any changes may have altered fertility trends and, thus, reversed the periods of stalled fertility.

Data and methods

In this research we focus on the six countries (stall period in brackets) where strong evidence of fertility stalls has been found (Schoumaker, 2019): Cameroon (1998–2011), Congo (2005–2011), Kenya (1998–2003), Namibia (2006–2013), Zambia (2001–2007) and Zimbabwe (2005–2015). We use the DHS, which are a rich source of demographic information on developing countries, especially in SSA. Among others, these surveys collect data on birth histories, fertility preferences

and family planning for women aged 15–49. We include all available DHS from the six countries in which it is possible to estimate fertility rates and unmet need for family planning, and to identify whether a birth is planned, mistimed, or unwanted. As a result, we use information from 27 DHS (see Table 1). We have excluded Kenya-DHS 1989 and Zimbabwe-DHS 1988 as they do not allow to identify the fertility planning status of the birth. In addition, Kenya-DHS 2014 includes complete information for only half of the survey, so we use only that half. The sample design shows that there is no bias in doing so and our data checks confirm that differences between estimates from the half sample and published information from the full sample are statistically not significant.

From birth histories, we calculate ASFR and TFR using the births that occurred in the three years prior to the survey. Then, we decompose fertility rates by fertility planning status. Following Bongaarts & Casterline (2018), ASFR and TFR can be understood as the sum of planned fertility (p), mistimed fertility (m) and unwanted fertility (u):

$$ASFR^a = ASFR_p^a + ASFR_m^a + ASFR_u^a$$

$$TFR = TFR_p + TFR_m + TFR_u$$

Alternatively, wanted fertility is the sum of planned fertility and mistimed fertility, while unplanned fertility, the sum of mistimed fertility and unwanted fertility.

We identify the fertility planning status from question M10 "Wanted pregnancy when became pregnant", which is collected for all pregnancies that ended in a live-birth during the five years prior to the survey. Possible answers are pregnancy wanted *(i)* then, *(ii)* later, or *(iii)* no more, at the time of becoming pregnant. We record a birth as planned if the answer is "wanted then", as mistimed if "wanted later", and as unwanted if "wanted no more". In addition, we use question M11 "Desired time would have waited" to determine the number of months that the mother would have wanted to postpone mistimed births. Accordingly, we use information on 110,173 births to women aged 15–49 years in the 36-month period prior to the survey. It should be noted that the questions M10 and M11 include all births that occurred up to five years prior to the survey date, although as noted above, we will estimate fertility rates over a three-year period prior to the survey.

We estimate unmet need for family planning for spacing as the proportion of women who are not using contraception but want to wait at least two years for their next birth or are unsure about having another child, or are pregnant from a mistimed pregnancy or are amenorrheic after a mistimed birth. Unmet need for limiting is computed as the proportion of women who do not use contraceptives but do not want to have more children, or are pregnant from an unwanted pregnancy or are amenorrheic after an unwanted birth. Total unmet need for family planning comprises either women with unmet need for spacing or women with unmet need for limiting. Unmet need also includes cases of contraceptive failure. We calculate the proportion of births after contraceptive failure by fertility planning status and link it to periods of fertility stalls. In this regard, many DHS collect information of contraceptive use using a monthly calendar, which goes back up to 72 months before the survey. From the contraceptive calendar it is possible to identify whether a method of contraception was being used at the time of pregnancy. Unfortunately, the Cameroon and Congo surveys do not have calendar data. Moreover, in Zambia only surveys after the stall period include it. Therefore, our analysis linking contraceptive failure and fertility stalls covers exclusively Kenya, Namibia and Zimbabwe. For this part of the analysis we use information on

38,542 births to women aged 15–49 years in the 36-month period before the survey. Table 1 summarizes the DHS that have contraceptive calendar data.

Table 1: DHS included in the study by country

Year	Births				TFR	Contraceptive calendar
	Total	% planned	% mistimed	% unwanted		
Cameroon						
1991	2,153	77.7	17.7	4.5	5.9	-
1998	2,519	70.1	19.7	6.6	4.9	-
2004	5,003	76.1	18.5	5.1	5.0	-
2011	7,350	73.7	19.5	6.4	5.2	-
2018	6,118	77.7	18.2	4.0	4.8	-
Congo						
2005	3,196	63.6	31.0	5.3	4.9	-
2011	5,284	69.0	27.1	3.7	5.2	-
Kenya						
1993	3,738	45.2	36.1	18.1	5.5	-
1998	3,542	49.8	36.3	11.1	4.8	X
2003	3,815	53.5	26.3	20.1	5.0	X
2008	3,668	54.2	26.6	19.1	4.6	X
2014	5,689	61.7	27.4	10.8	4.0	X
Namibia						
1992	2,554	63.2	22.7	13.4	5.4	-
2000	2,516	52.3	22.0	25.2	4.2	-
2006	3,210	45.3	26.7	27.9	3.6	X
2013	3,079	47.0	41.2	11.5	3.7	X
Zambia						
1992	4,138	64.2	29.1	6.6	6.6	-
1996	4,566	61.6	31.3	7.0	6.2	-
2001	4,230	56.5	23.0	20.4	6.0	-
2007	4,118	54.5	28.0	17.4	6.3	Not used
2013	8,117	60.0	34.0	5.9	5.3	Not used
2018	6,032	59.5	35.2	5.3	4.8	Not used
Zimbabwe						
1994	2,427	56.5	32.5	7.9	4.4	X
1999	2,252	61.4	31.8	6.6	4.0	X
2005	3,302	66.0	21.4	12.4	3.9	X
2010	3,705	66.1	26.2	7.8	4.2	X
2015	3,852	65.1	27.3	7.6	4.1	X

Our interest is to identify the factors that have most contributed to the emergence of fertility stalls. Previous research has shown that the decline in fertility in SSA is largely due to the decline in both wanted and unwanted fertility; however, the contribution of both in cases of slowdowns, halts and reversals of fertility decline remains unclear. In this regard, we propose some scenarios to analyze the effect of changes in levels of unmet need for family planning, resulting in mistimed and unwanted births, on fertility rates in periods when fertility stalls have emerged. In all scenarios we recalculate the TFR after making some assumptions on births, based on the classification by fertility planning status. We then examine whether the TFR trend has changed from the original

estimates. We aim to examine the extent to which fertility stalls are explained by wanted fertility or by unwanted fertility. The scenarios are:

- Scenario 1: There is no unmet need for limiting. In this scenario we assume that all women have full access to contraceptive use to limit family size effectively. We estimate the TFR from births reported as planned or mistimed, i.e. wanted fertility.

- Scenario 2: There is also no unmet need for spacing. As in scenario 1, we exclude all unwanted births. In addition, we record mistimed births on the date the mother would have wished to have them. To do this, we add the number of months the mother would have preferred to delay the birth to the date on which the birth actually occurred. As a result, mistimed births that occurred one or two years before the 3-year period for estimating the TFR may now be included in the calculation of the fertility rate while mistimed births that occurred in the 3-year period may be left out as mothers report that they wish they had had them after the survey date. Similarly, there are births that were already included in the 3-year period that remain so because the mother's preference shows a delay no later than the survey date. For consistency in the estimation, the same number of months is added to the mother's age at the time of birth. As a result, all mistimed births become planned births; thus, in this scenario there is no unmet need at all.

  It should be noted that our estimates show no risk of left-censoring as on average women declare they would want to delay their births for 26 months. This means that it is very unlikely that births that occurred 6 years ago and earlier before the survey would have been delayed to coincide with the 3-year period before the survey to calculate the TFR for this scenario.

- Scenario 3: There is no unmet need for limiting from contraceptive failure. We assume all women have used contraceptives efficiently to limit family size. In this scenario we include planned births, mistimed births and births declared as unwanted but in which the mother was not using contraceptives at the time of pregnancy. Thus, we assess exclusively the effect of correct contraceptive use on fertility limitation. Due to data availability, this scenario only covers Kenya, Namibia and Zimbabwe.

- Scenario 4: There is also no unmet need for spacing from contraceptive failure. We follow a similar approach to that of scenario 2, but in this case we record mistimed births on the date on which the mother would have preferred them to occur only for those mistimed births after contraceptive failure. In addition, we do not include unwanted births from contraceptive failure. Therefore, in this scenario we assess the effect of the absence of contraceptive failure on fertility levels.

We are aware that multiple scenarios could be proposed and it would be interesting to evalute them; however, considering the scope of this study, we have selected these scenarios for illustrative purposes to show the effect of reducing levels of unmet need on fertility rates in SSA countries, and to examine to what extent the failure to meet contraceptive needs has contributed to fertility stalls.

Results

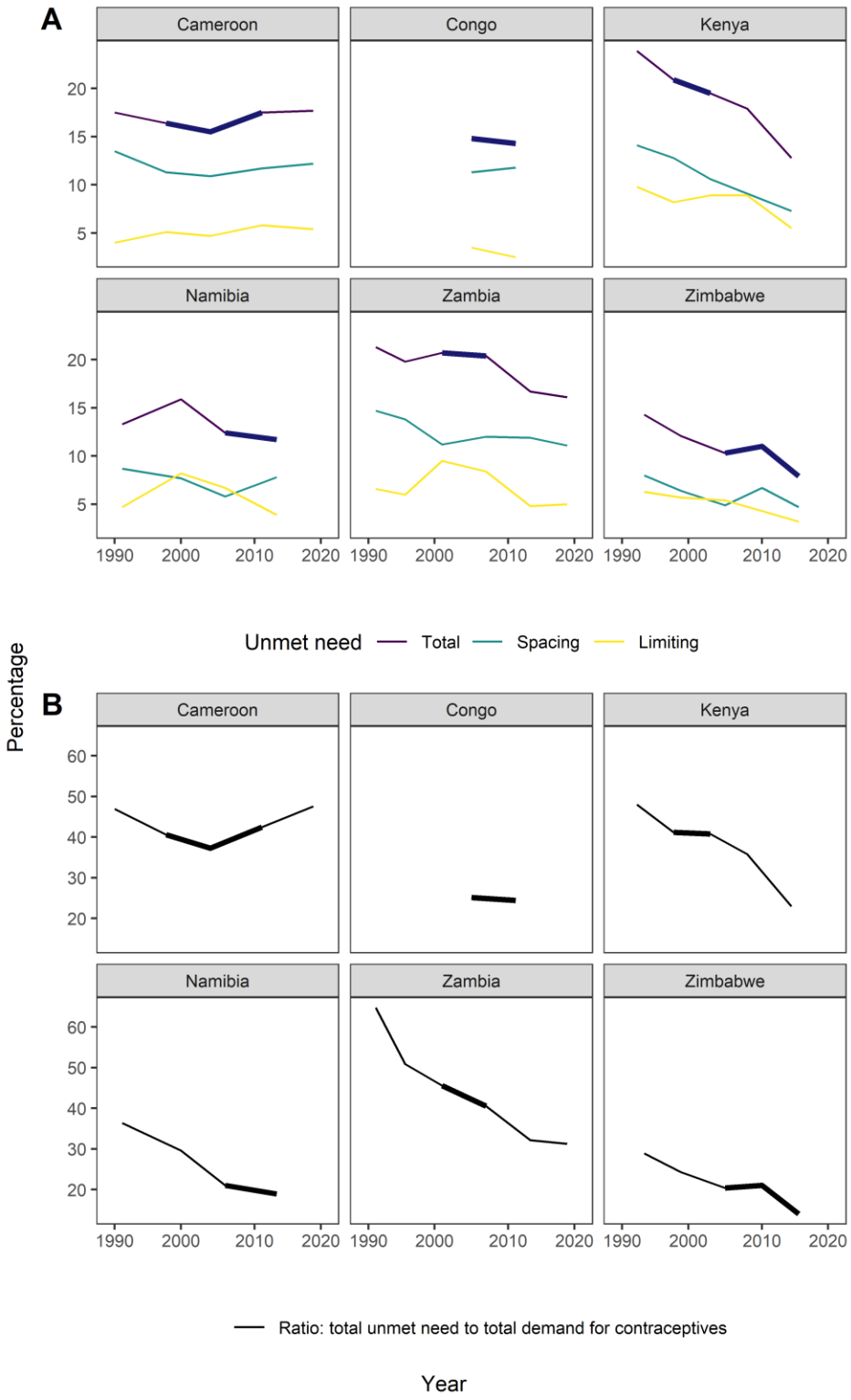
All countries currently have fertility rates well above replacement level. Table 1 displays the details by country. Congo has the highest TFR in the most recent DHS, while Namibia the lowest. Fertility is currently stalled in four of the six countries. Only Kenya and Zambia have resumed fertility decline. Regarding the stage of fertility transition, Congo is still in the earliest stage ($TFR > 5.0$), while the other countries can be considered as mid-transitional ($5.0 \geq TFR \geq 2.5$).

Of the total births included in our study, 62.5% are declared as planned, 27.3% as mistimed, and 10.2% as unwanted (see Table 1). Focusing on the most recent survey, we find the highest proportion of planned births in Cameroon, while the lowest, in Namibia. In contrast, Namibia has the highest proportion of births reported as mistimed and unwanted, while the lowest proportions are found in Cameroon and Congo respectively.

Panel A of Figure 1 presents trends of total unmet need, unmet need for spacing and unmet need for limiting. Periods of fertility stalls are highlighted with thicker lines. Except for Cameroon, total unmet need for family planning has decreased in all countries in the last three decades. Kenya and Zimbabwe show the largest reductions in total unmet need. Current levels of unmet need in Zimbabwe are at 7.9%. In Kenya, Namibia and Congo, unmet need is between 10% and 15%, while in Zambia and Cameroon, between 15% and 20%. In all countries, unmet need for spacing is higher than unmet need for limiting, although the size of the gap between them varies from country to country. The widest gap is in Congo, 9.3 percentage points, while the narrowest, in Zimbabwe, 1.5 percentage points. Usually, unmet need for spacing is associated with mistimed fertility and unmet need for limiting with unwanted fertility. We find that in all countries, except Kenya, there is a leveling off or increases in total unmet need during periods of stalled fertility. In Kenya there is an increase in unmet need for limiting, although the net effect is offset by the decline in unmet need for spacing. Both, unmet need for spacing and for limiting, have increased in Cameroon during the stall period. In Congo, Namibia and Zambia, unmet need for spacing increases during the period of stalled fertility, while unmet need for limiting decreases. There are two phases during the ten-year stall period in Zimbabwe. In the first five years, trends are similar to those of Congo, Namibia and Zambia. In the second five-year period, both trends decline.

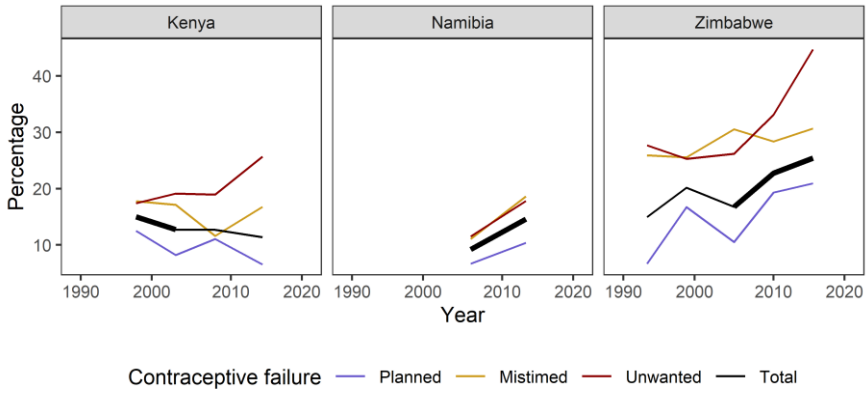
We present in Panel B of Figure 1 the ratio of total unmet need to total demand for contraceptives, that is the sum of met need and unmet need for family planning. Periods of fertility stalls are highlighted with thicker lines. On average, one in five women seeking contraceptives has unmet need in Congo, Kenya and Namibia, one in ten in Zimbabwe, one in three in Zambia, and one in two in Cameroon. An increasing trend in the ratio means that the relative share of unmet need with respect to levels of contraceptive use in the total demand for contraceptives has increased. Overall, we find that contraceptive use explains most of the demand for family planning and that its share has increased over the last three decades, except for Cameroon. As for the stall periods, we observe a decline in the ratio in Zambia, which would suggest an increase in contraceptive use as unmet need remained stalled. In Cameroon, Kenya and Namibia the ratio leveled off, although there are decreases in unmet need levels. This suggests a more pronounced decline in levels of contraceptive use during stall periods. In Cameroon, the share of unmet need in total demand first decreases and then increases. In contrast, in Zimbabwe the ratio first levels off and then decreases.

Figure 1: (A) Total unmet need for family planning, unmet need for spacing and unmet need for limiting, and (B) ratio of total unmet need to total demand for contraceptives. Period of stalled fertility is highlighted with a thicker line.



Using contraceptives means that some measures have been taken to space or limit childbearing; therefore, failures in its use may lead to unintended pregnancies. Figure 2 displays the proportion of births after contraceptive failure by fertility planning status. Although our results show that births after contraceptive failure are more often considered as unwanted, we note that a not minor proportion is also considered as planned even when contraceptives were being used at the time of pregnancy. From the latest DHS, 6.5% of planned births occurred after contraceptive failure in Kenya, 10.4% in Namibia and 20.9% in Zimbabwe.

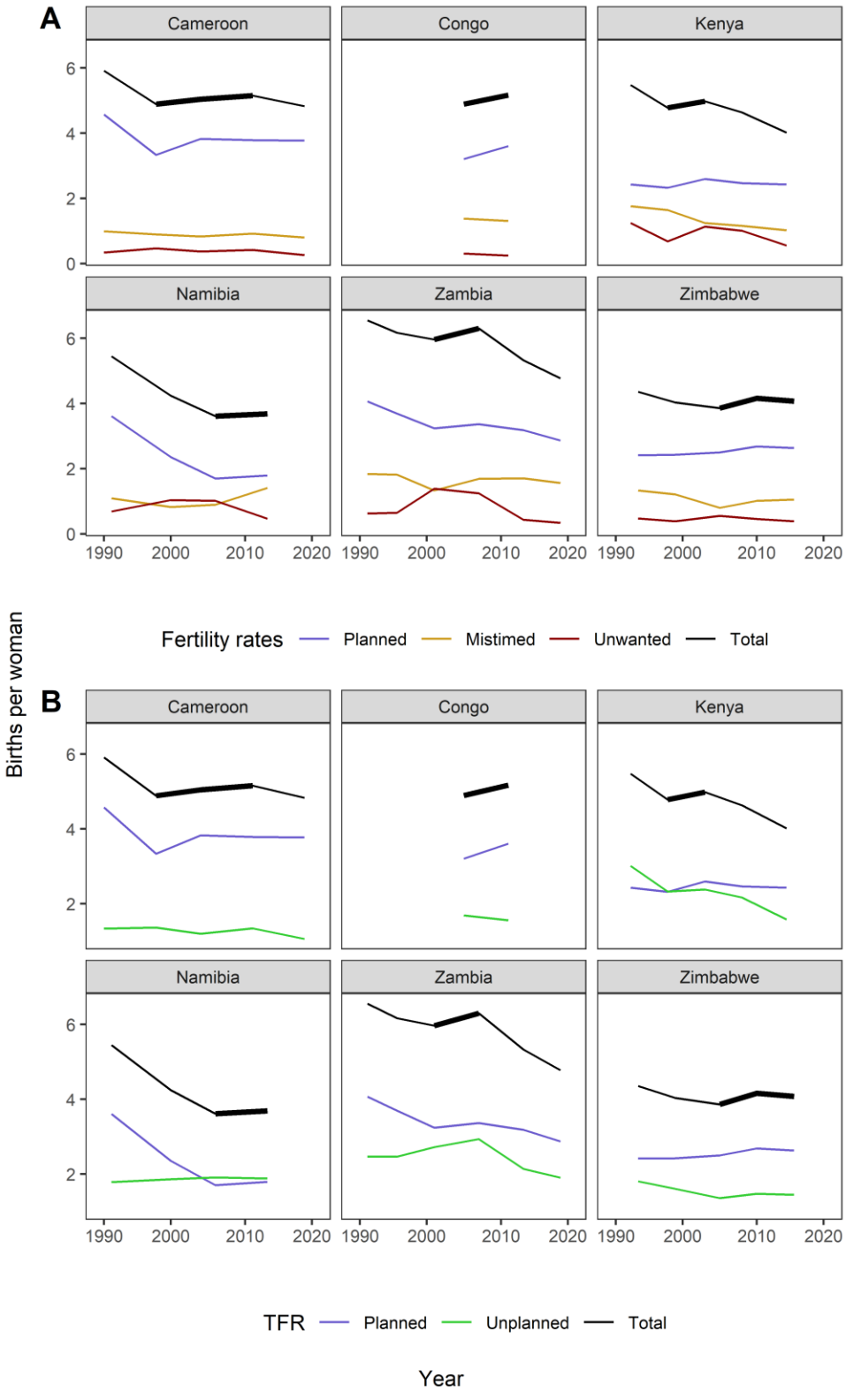
Figure 2: Proportion of births after contraceptive failure decomposed by fertility planning status. Period of stalled fertility is highlighted with a thicker line.



The proportion of births after contraceptive failure has decreased between the first available survey and the latest survey in Kenya, from 15% to 11.4%. Currently, 16.8% of mistimed births and 25.7% of unwanted births are the result of contraceptive failure. We observe a decline in contraceptive failure among total births and planned births during the stall period 1998–2003. In contrast, the proportion remains unchanged among mistimed and unwanted births. We find the opposite in Namibia. During the stall period, contraceptive failure doubled from 9.2% to 14.6%, as a result of an increase in the proportion of contraceptive failure among all fertility planning statuses. In the latest DHS, we observe a higher proportion of contraceptive failure among mistimed births, 18.6%, than among unwanted births, 17.8%. Zimbabwe is the country with the highest proportion of births after contraceptive failure, 25.4%, and it has increased 10.5 percentage points since the first available survey. Contraceptive failure has increased dramatically among planned births and unwanted births, especially during the stall period 2005–2015. Among planned births, it has tripled from 6.7% in 1994 and doubled from 10.5% during the stall period. Among unwanted births, during the period of stalled fertility contraceptive failure has increased 8.6 percentage points from 26.2% in 2005. Regarding mistimed births, proportions of contraceptive failure have remained invariant.

Positive variations in unmet need and increased births following contraceptive failure are reflected in changes in fertility rates by fertility planning status. Fertility decomposed by fertility planning status is presented in Figure 3. Panel A decomposes fertility in planned, mistimed and unwanted fertility, while Panel B, in planned and unplanned fertility. In both panels, periods of fertility stalls are highlighted with thicker lines.

Figure 3: Total fertility rate (TFR) decomposed by fertility planning status. Period of stalled fertility is highlighted with a thicker line.



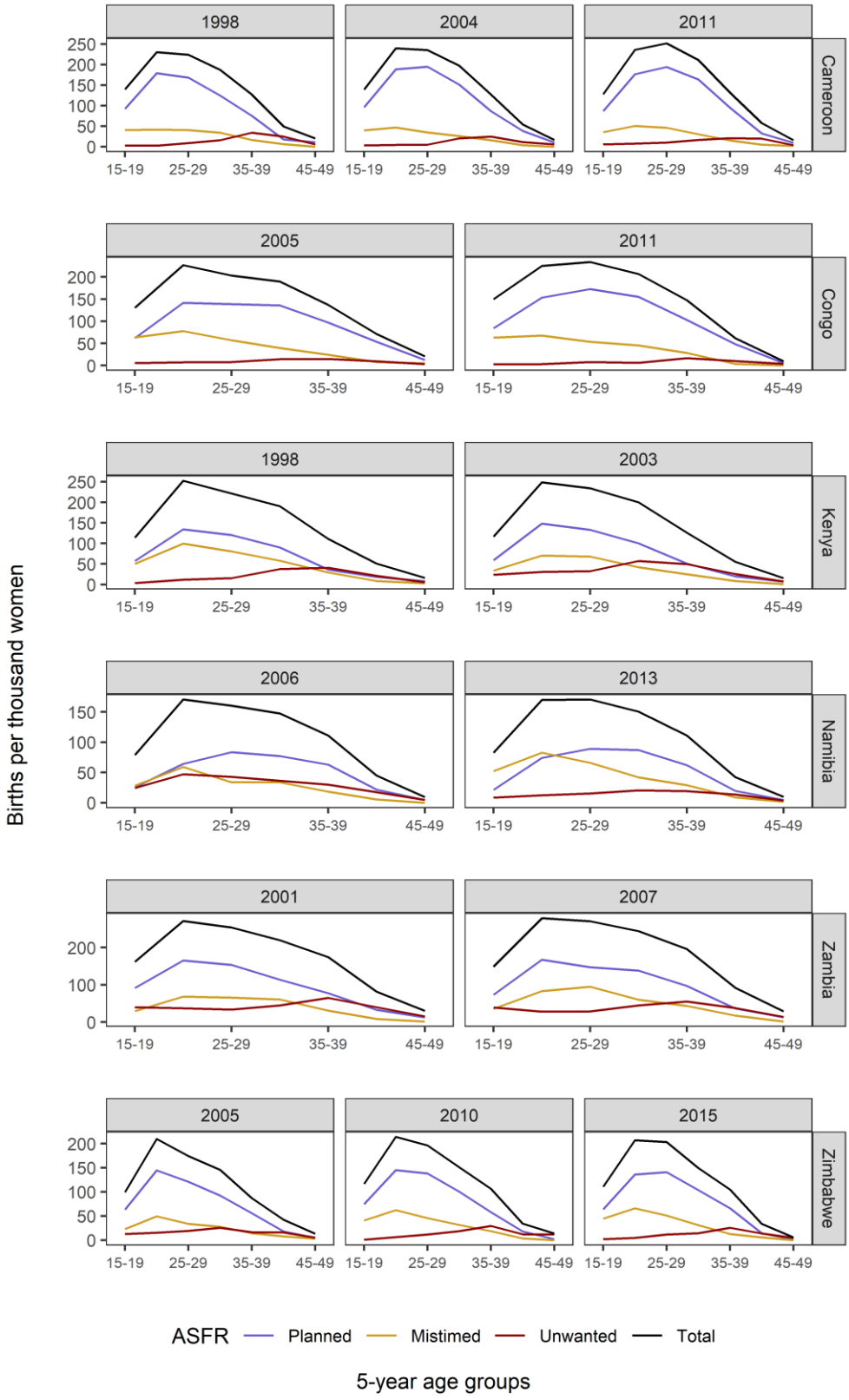
In Cameroon, planned fertility has been stalled since the mid-1990s and currently at 3.8 children per woman. Also, it is the country with the widest gap between planned and unplanned fertility, 2.7 births. In contrast, it is the country with the narrowest gap between planned fertility and actual fertility, 1.1 children. We observe an increase in planned fertility during the stall period, while mistimed and unwanted fertility remained invariant. In Congo, the increase in planned fertility explains the increase in TFR. Currently, planned fertility represents 69.8% of TFR. Along with Cameroon, Congo has the smallest gap between total fertility and planned fertility. In addition, currently unplanned fertility is 1.6 children per woman and the gap with planned fertility is 2 children.

Planned fertility in Kenya has been stalled since the mid-1990s. Currently, it is at 2.4 births per woman. In contrast, unplanned fertility has decreased from 3 children per woman in the early 1990s to 1.6 children per woman in most recent years mainly due to declines in mistimed fertility. We observe an increase in unwanted and planned fertility during the stall period. In Namibia, planned fertility declined from 3.6 births per woman in the early 1990s to 1.8 births per woman in the mid-2000s and stalled thereafter, contributing to the stagnation of the TFR. During the same period, mistimed fertility also increased. Namibia is the country with the narrowest gap between planned and mistimed fertility, 0.4 children. In addition, Namibia is the only country where unplanned fertility is currently higher than planned fertility.

Although planned fertility in Zambia has decreased 1.2 births over the past 30 years, we observe a halt in its decline during the period of increased TFR. In addition, mistimed fertility increased over the same period. Zambia is currently the country with the highest mistimed fertility rate, 1.6 children per woman. Unplanned fertility increased sharply during the stalled period, mainly due to the increase in mistimed fertility, but it has declined steadily since then. In Zimbabwe, planned fertility has increased 0.2 births per woman from the 1990s, reaching 2.6 births per woman in recent years. Mistimed fertility began to decrease in the 1990s, but then it has increased since the mid-2000s. As a result, TFR has increased in recent years due to the increase in planned fertility and the leveled off in unplanned fertility.

Age-profiles help to explain fertility dynamics. Age patterns suggest mistimed fertility is more common among women younger than 25 years, while unwanted fertility among women older than 39 years. Figure 4 displays ASFR in periods of stalled fertility decomposed by fertility planning status. In Cameroon, we observe that the increase in fertility is mainly due to the increase in planned fertility among women aged 25–29 years. There is also an increase in mistimed fertility among women aged 20–29. We find a similar pattern in Congo. The increase in planned fertility among women in the 25–29 age group contributed the most to the increase in TFR. In this case, we also observe an increase in adolescent planned fertility by 22.5 births per thousand women during the stall period, while mistimed fertility barely changed. In contrast, during the stall period in Kenya, adolescent planned fertility remained at similar levels, while mistimed fertility almost halved. Kenya is the only country with an increase in unwanted fertility in all age groups, especially among women under 35 years of age. We also observe an increase in planned fertility among women aged 20–29.

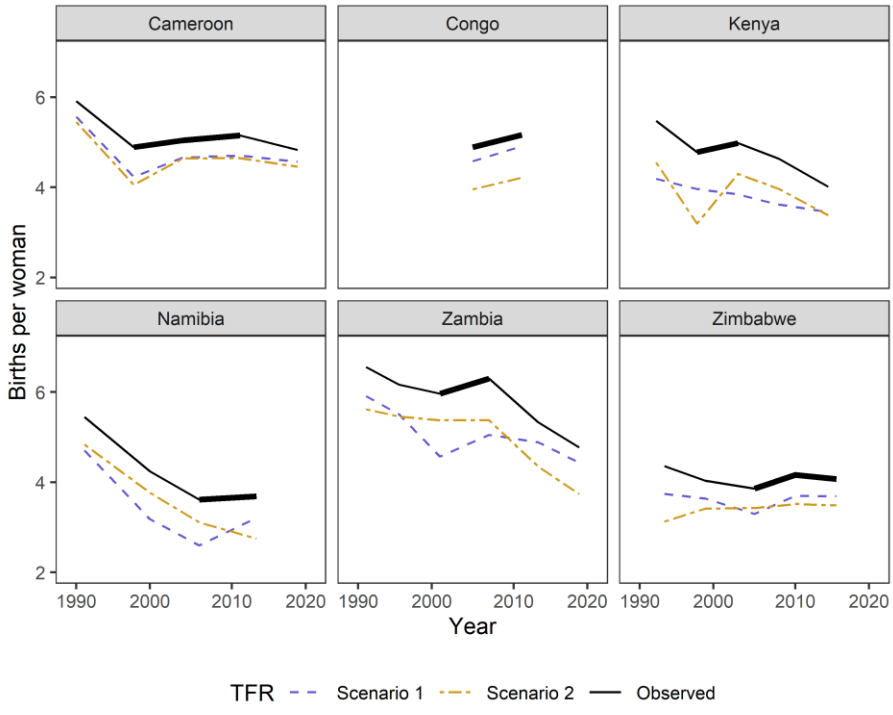
Figure 4: Age-specific fertility rate (ASFR) in periods of stalled fertility decomposed by fertility planning status.



In Namibia, mistimed fertility increased dramatically among women under 34 years of age accounts during the period of stalled fertility, especially because of the sharp increase in the rates of adolescent girls and women in the 20–24 age group. We note that among adolescents, mistimed fertility is even higher than planned fertility. We observe also a slightly increase in planned fertility among women of ages 25–34. As in Namibia, there is a dramatic increase in mistimed fertility during the stall period in Zambia. Fertility changes in women of ages 15–29 account for the increase. A slight increase in planned fertility is registered among women between 30 and 34 years of age. In Zimbabwe, we observe a decline in unwanted fertility among women in all age groups during the stall period. In contrast, planned fertility has increased, especially among women in the 25–29 and 35–39 age groups, as well as mistimed fertility.

We propose some scenarios to better understand the potential effect of reductions in unmet need on fertility rates. Figure 5.1 presents TFR estimates from scenarios 1 and 2. Through scenario 1 we present a case with no unmet need for limiting, i.e. there are no unwanted births. Meeting contraceptive needs for limiting family size leads to lower fertility rates. In the latest survey, wanted fertility is lower by 0.4 children than observed TFR on average. The widest gap between wanted fertility and actual fertility is found in Kenya, 0.56 children, while the narrowest, in Congo, 0.25 children. Despite wanted fertility is lower than actual fertility, we still observe periods of stalled fetility in allmost all countries. Only in Kenya would adequate access to contraceptives to limit childbearing have prevented the emergence of the period of fertility stagnation.

Figure 5.1: Fertility rate estimates from scenarios: No unmet need for limiting (scenario 1) and neither unmet need for spacing (scenario 2). Period of stalled fertility is highlighted with a thicker line.

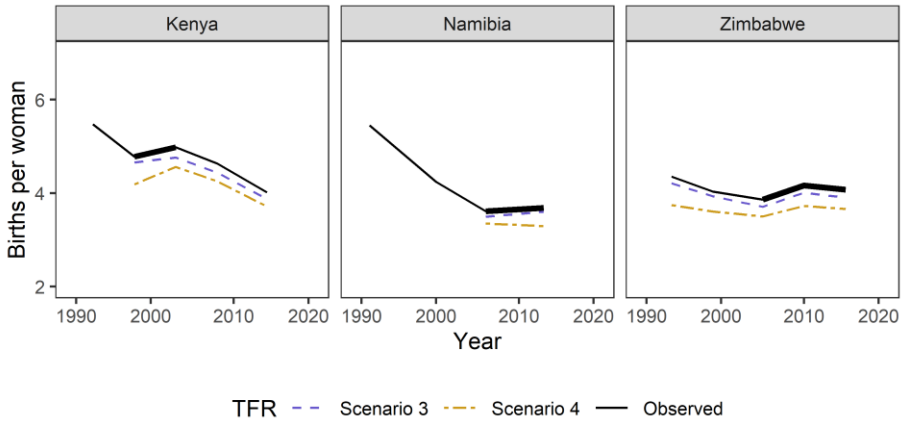


Estimates from scenario 2, dark yellow lines in Figure 5.1, show an even greater potential reduction in fertility rates. Scenario 2 refers to no unmet need for limiting and no unmet need for spacing. Thus, it includes planned births and mistimed births shifted to the date on which the mother would

have preferred to have them. In other words, mistimed births have become planned births, but at a later date. As a result, in this scenario there is no unmet need at all. In the latest survey, fertility in scenario 2 is on average lower by 0.8 children than actual fertility. The widest gap between fertility when there is no unmet need and actual fertility is found in Zambia, 1.04 children, while the narrowest, in Cameroon, 0.37 children. As for the periods of stalled fertility, meeting contraceptive needs would have prevented the emergence of fertility stalls in Namibia and Zambia. Moreover, in Namibia, fertility rates would have been approaching to replacement level. For the rest of the countries, fertility plateauing is explained by planned fertility.

Figure 5.2 displays TFR estimates from scenarios 3 and 4. Here we only cover Kenya, Namibia and Zimbabwe as they are the countries that include contraceptive calendar data. Scenario 3 assumes no unwanted births from contraceptive failure. From the contraceptive calendar we can identify whether a birth occurred while contraceptives were being used at the time of pregnancy. We record these births as a result of contraceptive failure. We then remove these births from the analysis and thus assess the effects of this scenario on fertility. As expected, fertility estimates are lower than observed TFR in the three countries, although the gap is narrow. On average, the potential contribution to fertility reduction from preventing contraceptive failure when it involves limiting family size is just 0.1 children. We note that in all countries, fertility trends in scenario 3 are virtually parallel to the observed TFR trends; thus, the periods of stalled fertility remain in all countries. In contrast, results from scenario 4 show that using contraceptives efficiently to both, space and limit childbearing, would lead to larger fertility reductions. Our findings suggest that fertility rates in the absence of contraceptive failure would be lower than the observed TFR in 0.4 children, on average. The larger difference between actual fertility and fertility with no contraceptive failure is found in Zimbabwe, 0.42 children, while the smaller, in Kenya, 0.3 children. We notice that the efficient use of contraceptives would have prevented the onset of the stall period in Namibia.

Figure 5.2: Fertility rate estimates from scenarios: No unmet need for limiting from contraceptive failure (scenario 3) and neither unmet need for spacing from contraceptive failure (scenario 4). Period of stalled fertility is highlighted with a thicker line.



Discussion

In terms of fertility transition, we would expect, first, the decline in mistimed and unwanted fertility as contraceptive use increases and, then, the decrease in planned fertility as demand for children declines (Bongaarts, 1982). Unfortunately, in SSA contraceptive prevalence still remains at low levels and demand for children is well above replacement level (Casterline & Agyei-Mensah, 2017; United Nations, 2021). On the one hand, low rates of contraceptive prevalence lead to high fertility. On the other hand, the desired number of children decreases as societies improve their well-being; nevertheless, SSA is still the most economically depressed region in the world (Bongaarts & Casterline, 2018). Therefore, the demand for children would be expected to remain high, at least in the short term. This configuration slowdowns and delays fertility transition and have contributed to the emergence of periods of stagnant fertility. We have focused our analyses on the six countries where evidence supports strong cases of fertility stalls.

Our findings suggest that fertility plateaus are mainly driven by wanted fertility, i.e., fertility stalls are wanted stalls. Wanted fertility, especially planned fertility, explains most of stall periods. Planned fertility shows declines only in Namibia, although it has stagnated in the recent years, and in Zambia, although there is a visible stall in the mid-2000s. In constrast, unwanted fertility contributes to fertility stalls only in one case, Kenya. Although planned fertility increased in Kenya during the stall period, the decline in mistimed fertility offset it, resulting in a decline in wanted fertility. In contrast, unwanted fertility contributed substantially to the increase in TFR. In Cameroon, for instance, increases in planned fertility and leveling off of mistimed fertility led to increases in wanted fertility during the stall period. In parallel, unwanted fertility leveled off. In Congo, wanted fertility increased due to increases in planned fertility, while mistimed and unwanted fertility slightly decreased. In Namibia, increases in mistimed fertility led to increases in wanted fertility. At the same time, unwanted fertility declined while TFR stalled. In Zambia and Zimbabwe, wanted fertility increased after both planned and mistimed fertility increased during the stall period. In contrast, unwanted fertility does not explain the period of stagnation in either country, as it decreased while TFR increased.

We find that planned fertility rates are currently near the replacement level in Kenya, Zambia and Zimbabwe, and below replacement level in Namibia. These countries would benefit the most from meeting contraceptive needs to avoid unplanned births. In Cameroon and Congo, planned fertility rates remain well above replacement level, which means that, for fertility to decrease, additional efforts would have to be devoted not only to increase the efficient use of contraceptives but also to decrease fertility desires.

Unmet need for family planning is still high in many SSA countries (United Nations, 2021). From the countries in this research, on average one in seven women cannot access to or adequately use contraceptives. Low levels of contraceptive use and high levels of unmet need favor high fertility rates. We find in most countries non-decreasing unmet need in periods of stalled fertility. In the countries studied, with the exception of Kenya, both mistimed and unwanted fertility, which are related to unmet need, are currently as high as they were in the early 1990s. Moreover, the relevance of contraceptive use on total demand for contraceptives decreased during stall periods in half of the countries we have studied, which means that the lack of access to and the misuse of contraceptives account for increased fertility. Results suggest that the increase in contraceptive use was limited during periods of stagnation.

According to our results, unplanned fertility currently accounts for two out of every five births on average. Thus, meeting contraceptive needs has a positive effect on fertility decline. For instance, it would have prevented periods of stagnation in Namibia and Zambia. In addition, although in the other four countries reducing the levels of unmet need would have not prevented the emergence of stall periods, it would have led to lower fertility levels. Our findings show that reducing the unmet need for spacing has a greater effect on fertility decline than reducing the unmet need for limiting, which is consistent with the observed higher levels of unmet need for spacing than unmet need for limiting. Failure to meet spacing needs leads to shorter birth intervals and a woman may have more children than desired during her reproductive life. Relating these results to previous research findings (Sánchez-Páez & Schoumaker, 2020), women in SSA usually delay childbearing by using postpartum abstinence. Unfortunately, failure to use this method has already led to increases in fertility rates.

Births after contraceptive failure are more likely to be declared as unwanted, although this is not to say that there is not a considerable proportion reported as mistimed. Our findings show the importance of adequate use of contraceptives. Avoidance of contraceptive failure would lead to lower fertility rates and would have contributed to prevent the emergence of the stall period in Namibia. It should be noted, we only observe pregnancies after contraceptive failure that have been carried to term. A significant proportion of pregnancies following contraceptive failure ends in induced abortion (Bradley et al., 2011; Sánchez-Páez & Ortega, 2019; Sánchez-Páez & Ortega, 2021; Singh et al., 2018). Unfortunately, induced abortion is highly restricted and unsafe in SSA and it costs many lives every year. Using contraceptives efficiently not only decreases fertility rates but also prevents the loss of women's lives.

Regarding policy implications, not only access to but also the correct use of contraceptives is important. Thus, from sexual and reproductive health and rights perspective, meeting the demand for contraceptives will benefit socities as reducing levels of unmet need leads to lower fertility rates through decreased unintended births. High fertility rates, and particularly high levels of unintended pregnancies, in developing countries have negative consequences. At a more general level, they do not allow the welfare of the population to improve (Bongaarts, 2017). At a more specific level, they negatively affect the health outcomes and life trajectories of mothers and newborns (Bradley et al., 2011; Gipson et al., 2008; Hindin et al., 2016; Sánchez-Páez & Ortega, 2019; Sánchez-Páez & Ortega, 2021; Singh et al., 2018). Investing in family planning programs and the provision of contraceptives should be high on the political agenda (Casterline, 2017). Younger women need contraceptives to space births and older women to limit childbearing. Specifically, policies aimed at adolescents should be strengthened. Our results show that adolescent unplanned fertility is higher than adolescent planned fertility in many countries. A major problem is that the earlier childbearing begins, the greater the probability of reaching high parities.

As for our limitations, we are aware that the classification by fertility planning status could be subject to rationalization, since the mother is asked after delivery about the preferred time she would have wished to become pregnant. For instance, there are women reporting births as planned even though they were using contraceptives prior to pregnancy, which would signal the intention to space or limit childbearing. On the other hand, birth histories and contraceptive calendar data are subject to recall bias, although to minimize this we have used information from the last three years prior to the survey. Finally, as mentioned previously, we have not been able to analyze contraceptive failure in all countries of our study due to data limitations.

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