REVIEW ARTICLE

Human fertility and religions in sub-Saharan Africa: A comprehensive review of publications and data, 2010-2020

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Abstract

Fertility is declining only slowly in Sub-Saharan Africa (SSA) and religion may be one factor involved. Based on the literature, we reviewed fertility rates of followers of different religions in SSA, and whether religion influences fertility. We used the Web of Science, Scopus, Google Scholar and reference lists to find papers, selected based on inclusion and exclusion criteria. Within 21 countries, followers of African Indigenous Religions (AIR) had higher fertility (4-58%) than Christians. Within 25 countries, followers of Islam had higher fertility (2-36%) than Christians, though not in Zimbabwe and Uganda (-2% in each). Followers of AIR and Islam had on average similar fertility levels, as had Protestants and Catholics. Fertility was associated with religion-related themes in focus-groups and interviews. The most frequent themes for "increasing fertility" were related to religion (11 cases) and polygamy (11), whereas the most frequent themes for "limiting fertility" were financial constraints (7) and quality of life (5). These and other results suggest that religious denominations and faith contribute to high fertility in SSA. *(Afr J Reprod Health 2023; 27 [1]: 119-171).*

Keywords: Christianity, Islam, African indigenous religions, quantitative articles, qualitative articles

Résumé

La fécondité ne diminue que lentement en Afrique subsaharienne (ASS) et la religion peut être l'un des facteurs impliqués. Sur la base de la littérature, nous avons examiné les taux de fécondité des adeptes de différentes religions en ASS et si la religion influence la fécondité. Nous avons utilisé le Web of Science, Scopus, Google Scholar et des listes de références pour trouver des articles, sélectionnés en fonction de critères d'inclusion et d'exclusion. Dans 21 pays, les adeptes des religions indigènes africaines (AIR) avaient une fécondité plus élevée (4-58%) que les chrétiens. Dans 25 pays, les adeptes de l'islam avaient une fécondité plus élevée (2-36%) que les chrétiens, mais pas au Zimbabwe et en Ouganda (-2% chacun). Les adeptes de l'AIR et de l'islam avaient en moyenne des niveaux de fécondité similaires, tout comme les protestants et les catholiques. La fécondité était associée à des thèmes liés à la religion dans les groupes de discussion et les entretiens. Les thèmes les plus fréquents pour « augmenter la fécondité » étaient liés à la religion (11 cas) et à la polygamie (11), tandis que les thèmes les plus fréquents pour « limiter la fécondité » étaient les contraintes financières (7) et la qualité de vie (5). Ces résultats et d'autres suggèrent que les confessions religieuses et la foi contribuent à une fécondité élevée en ASS. *(Afr J Reprod Health 2023; 27 [1]: 119-171).*

Mots-clés: Christianisme, islam, religions indigènes Africaines, articles quantitatifs, articles qualitatifs

Introduction

The global human population more than doubled between 1970 and 2021, from about 3.7 to 7.9 billion[1]. The UN projects that population growth will continue for more than 60 years, to a peak of 10.4 billion. Strong population increase contributes to environmental problems, such as local and regional shortage of food and freshwater, reduced biodiversity, pollution, and greenhouse gases[2-5]. In poor countries with strong population growth, women and families risk impaired health and increased poverty[6]. Reduced population growth is a policy that many governments in Africa and elsewhere embrace, according to the UN[7].

Fertility (number of children per woman, birth rate, and related measures) is basic in demography and policy, and in attempts to influence population size by humane means[6]. Fertility decreased in Western developed countries from about 1870 up to present[8,9], and in developing countries from about 1965 and onwards. However, this process is slow especially in Sub-Saharan Africa (SSA), where TFR (total fertility rate,

average number of children per woman) was estimated at 4.52 children per woman 2022, compared to 1.5-2.8 for other global regions[1]. SSA has a young population, implying population momentum and time-lag in population decline even if TFR falls at present (as many young people will form families). Assuming no increased mortality, strong population growth is expected in SSA; the UN[1] projects a population increase from 1.2 today to 3.4 billion in 2100. This projection depends on the assumption that TFR will fall substantially in SSA in the future, to 2.0 in 2100[1].

TFR and related measures of fertility depend on many factors, such as economy, education, female empowerment and schooling, family planning programs, social norms and religiosity. Many studies have investigated these factors in SSA[10-15]. Among global regions, TFR is negatively associated with education (number of school years for women), and this relationship is strong also within SSA[16]. This study also identified one factor that may promote fertility, or retard its decline: high degree of religiosity[16]. TFR was positively associated with religiosity among the global regions, and also within SSA (where countries were used as units).

Heaton[17] studied TFR and religions (denominations) using Demographic and Health Surveys (DHS) from 30 countries in Asia, Africa and Latin America. Muslim fertility was substantially higher than Christian fertility in many countries. Similar results were reported by Pew Research Center[18-19]. In Heaton's[17] study, the average difference between Catholics and Protestants was small. Cross-country variation in group differences was at least as large as the average difference. Although other factors (e.g. level of development, social factors) probably also affected TFR, Heaton[17] concluded that they do not explain or eliminate religious influence.

Westoff and Bietsch[15] also used DHS surveys to study fertility versus religious affiliation, but for 28 countries in SSA. Muslims had higher fertility than non-Muslims, a result similar to that of Pew Research Center[20]. High fertility was linked to a Muslim preference for larger family, less use of contraception, earlier age at marriage, and greater prevalence of polygyny[15]. In multivariate regression using countries as units, education, wealth, rural-urban residence, exposure to mass media, child mortality, and measures of gender equality were apparently not responsible for the fertility difference between Muslims and non-Muslims, though in some instances they seemed to reduce differences between the two groups[15].

During the last decade, the literature on fertility, contraception and religion increased markedly. This applies to SSA as much as to other regions, or even more so: religion is a strong force in African societies, attracting much interest[21-23]. In Western and other societies, fertility and religiosity is a contentious issue[23-25], making it important to review and summarize the scientific literature on the subject. Our purpose here is to review how fertility is related to religion and denominations in SSA, and countries therein. We wish to describe the recent situation and therefore limited our review to scientific publications 2010-2020 (including also some data from the UN and the World Bank). Unlike earlier reviews[15,17] the present one is not limited to DHS surveys. A Master thesis by Nicola Turner[26] is the basis for our work.

Here we ask the following three questions:

1. Which religion(s) exhibits highest average fertility in SSA and among countries therein? Can religions be ranked in their association with average fertility level, and is ranking consistent in pair-wise comparisons of denominations by country? The literature dealing with this question is referred to as "quantitative papers" (see Methods and Results below).
2. Is there evidence that religion influences fertility to a similar extent as do other factors, or more, or less than other factors (for instance desired family size, patriarchy, availability and cost of modern contraception)? The literature dealing with this question is referred to as "qualitative papers" (see Methods and Results below).
3. Is there evidence that the total fertility rate (TFR) is associated with type of denomination, and with religiosity? One may expect relationships between countries' TFR and proportions of citizens affiliated with a type of denomination, and between TFR and degree of religiosity in the country. The presentation dealing with this question is based on data and graphical analysis (third part of Results).

Note that almost all people, to judge from e.g. Gallup surveys, are religious in SSA (about 95%). This makes it difficult to analyze differences in fertility of the non-religious versus the religious,

but we nevertheless made such analyses too. In addition, fertility in relation to degree of religiosity is of interest[16] and included in some analyses below.

Methods

Geographical area and search for literature

The World Bank[27] identifies 48 countries in SSA, including Somalia and Sudan. We initially included all these countries, and also Djibouti (n=49). But due to strong religious and cultural differences between island and continental nations, and small island populations dominated by single religions in addition to strong tourist influences, we excluded Cabo Verde, Comoros, Seychelles, Mauritius and Sao Tome & Principe, resulting in n=44. We included Madagascar due to its size and religious and cultural diversity. Dependent and/or disputed territory is not included (Mayotte, Réunion, Saint Helena and Western Sahara). Thus, the number of countries from continental SSA in our review is 44 (see countries in Appendices E and F).

Using the Web of Science (WoS) we reviewed literature that included religion as one, or only, factor influencing fertility. For the period 2010-2020 (2020; up to 31 August) the following terms were used in search of title, abstract and key words of papers in WoS: "(country, each of 44) AND fertility AND religio*". Only English literature was included. We searched for Ivory coast also in its French name (Côte d'Ivoire) and Eswatini also in its former name (Swaziland).

The search result from WoS was compared with F. Götmark's collection of papers on the subject. Important papers from that collection were missing. We therefore added a second large database, Scopus, for a search using the same terms. In Excel spreadsheets, we sorted all papers and removed duplicates (41% of all collected papers). At that stage, we had in 189 papers, including Götmark's collection of papers (15 papers), and some papers with a focus outside SSA. Finally, we searched Google Scholar in the same way, though selectively by avoiding poor studies (grey literature) and only searching for apparently highly relevant papers. Moreover, we searched the reference lists of all papers found from the year 2020, to find more potential papers of interest from the period 2010-2020. The first search (Google) yielded only 2 highly relevant papers, the second (reference lists) 23 papers, giving a total of 214 papers.

Using EndNote, we extracted Abstract and country (countries) from the papers and categorized type of publication (using additional information if necessary). Nine types of publication had been set up beforehand; Table 1 shows the number of papers of each type. Nearly all papers were based on combination of survey or poll and quantitative analysis, but 66 were qualitative analysis. Several papers were review, book, or other material (Table 1).

Assessment of papers to be included in the review

To define inclusion and exclusion criteria for the 214 papers, we extracted the following information from each paper: main study concern, study objectives, type of methods, type of dependent and independent variables (where applicable), and two types of conclusions; firstly, about the role of religion, and secondly, the general conclusion, often including other factors than religion as well.

We included papers that analyzed indigenous African religions[22], Christianity and Islam, but excluded papers concerning other smaller denominations in SSA. Eight quantitative papers that examined indigenous religions referred to these religions as 'traditional'. In this study, we refer to these as African Indigenous Religions (AIR) rather than traditional due to these religions being a dynamic part of contemporary Africa. The plural form takes into account that these religions allude to the belief in a Supreme Being known by different names in different ethnic groups, such as Nyame by the Akan, and Mawu by the Ewe[22].

We also excluded papers that appeared in the original search results but focused on countries outside of SSA and not in English (Abstract only, could be in English). Moreover, some papers collected did not examine the stated conclusions, and/or were of poor quality. Reviews and overviews were also excluded (though used outside analyses below, e.g. in Discussion). This procedure resulted in a set of 83 papers, worth assessing in detail.

Based on the first type of conclusion (regarding role of religion) we assessed the degree of focus on religion, and split the 83 papers into four categories: 1) those with strong such focus; 2)

Table 1: Type of publication: Categorization and number of papers of each type found, among the 214 from the literature search (several studies included a combination of the categories below [mixed method] and therefore the sum is 328)

Category	No. of Papers
Survey or poll, quantitative analysis, including structured questionnaires and interviews.	124
Quantitative analysis with factors (explanatory variables) measured (e.g., agency data).	90
Quantitative analysis with factors (explanatory variables) measured and longitudinal analysis (e.g., agency data).	22
Quantitative analysis as above, based on some change, but important pre-change data lacking.	0
Quantitative analysis as above, based on some change, with before and after data, also referred to as "natural experiment".	1
Qualitative analysis, e.g. from focus group discussions or interviews.	66
Projections for future TFR, birth rate, etc, based on model and assumptions.	0
Literature reviews.	9
Book, chapter, or other material.	16

Table 2: Category of papers found in literature search, to establish which ones to include in the review about fertility: Strong, and Moderate-Strong type a), were included

Category (focus on religion)	No. of Papers	Definition
Strong	14	Focus of analysis was religion, regardless of its relationships or influence on fertility.
Moderate-Strong a)	61	Religion analysed as one possible influential factor
Moderate-Strong b)	1	Religion analysed as possible influential factor among other factors, but without links to specific religions.
Weak-Moderate	7	Religion was broadly discussed, but not examined in depth.
Weak	0	Religion only mentioned in passing, no specific religions examined.

moderate focus [two subcategories, a) and b)]; 3) weak-moderate focus, and 4) weak focus (see Table 2 for definitions, and number of papers). After carefully checking approach and depth of analyses, we selected papers with strong and moderate focus (the single paper in subcategory b lacked information on type of denomination, and was excluded). This resulted in 75 papers (Table 2), remaining for further selection of quantitative and qualitative studies to include.

Of these 75 papers, 60 papers used quantitative analysis and were subsequently categorized and sorted by their sample population (e.g. age range, general population or non-general population). The largest sample group was of males and females of reproductive ages (ranging from 12 to 65 years) from the general population which contained 19 studies. Other sample groups include adolescents, adolescents and young adults, and those who are HIV-positive from the general population, while the non-general population includes family planning providers and religious leaders. Due to few papers that dealt with fertility, these studies were excluded. In our review, we used the 19 quantitative studies of fertility in the largest group of papers ("Reproductive ages from the general population" in Appendix A) and 15 qualitative studies of fertility. Quantitative and qualitative papers are listed and described by their approach and analysis in Appendices A and B, respectively.

Fertility measures (dependent variable) used in the 19 quantitative papers include the following:

Children Ever Born (mean number of children, both surviving and dead, who were born alive to all women in a sample), 7 papers.

Fertility Desires (mean number of children desired), 6 papers.

Total Fertility Rates (TFR) (average number of children women would bear, if they survived to the end of reproductive life and had the same probability of child-bearing in each age interval as currently prevails across the population), 5 papers.

Number of Births in Last Five Years (mean for live births in the last five years), 3 papers.

One paper[15] measured three dependent variables (fertility desires, TFR, number of births in last five years) so the sum of studies (21) exceeds 19 papers. The qualitative papers dealt fertility and with religious aspects, but also other factors related to family and childbearing. Four studies were focus

group discussions, three studies in-depth interviews, and eight combined these two approaches. All participants were affiliated with either Christianity or Islam. One study[28] included refugees in Ethiopia from Eritrea and Somalia. No participants were affiliated with African Indigenous Religions. Religiosity was explored in only one study[29]. For characteristics of sample populations and study design, see Appendix B.

We categorized two common themes in the 15 qualitative papers: those representing 'increasing fertility', and those representing 'limiting fertility'. We present frequencies of the themes for mention of religion (occurrence) in papers, and also for mention of other factors with bearing on fertility, allowing comparisons of their relative frequencies. For themes, summaries of findings and representative quotes from the studies, see Appendices C1-C7 for increasing fertility and Appendices D1-D5 for limiting fertility.

For characteristics of sample populations and study design of papers, see Appendix A (quantitative papers) and Appendix B (qualitative papers).

Analysis of information in papers selected for review

The results from each paper and fertility measure were extracted and tabulated. We present graphs to display the findings for the countries, like in Heaton[17]. Where religions from the same country had multiple results (multiple papers), we calculated mean values. In contrast to Heaton[17], who used DHS surveys and a single fertility measure (children born in the last 5 years), we use papers that report several measures (four types). To be able to compare religions in graphs, we pool these four into "fertility", and calculated proportional difference in fertility. For each computed difference the same reported fertility measure, one of four, is used. Mean values in graphs may therefore include several measures. If there were more than one study from a country, we calculated a mean difference. The means are based on the same individual fertility measure per paper and country, allowing comparison of religions. Our graphs below give fertility difference in percent for pairwise comparisons of religions in the countries. Additionally, DHS data in some studies of countries are not fully independent, and even if they were, the exact results may differ due to sample (e.g., women ever married vs. all women; women only vs. men and women), motivating our analysis of mean values.

In analysis of countries, the samples of studies were small (ca 1-5, in a few cases 5,6,7) and calculation of SD would be misleading, instead we give reference to the original papers, for closer examination by interested readers (see Appendices). For research question 3 (see Introduction), we use countries as unit in regressions. Because countries are not independent statistical units in the present type of analyses[16,30] we do not use statistical inference (statistical test) but give the coefficient of determination, r^2, in graphs. For the UN data used in this analysis, see Appendix E.

Results

Distribution of papers by country

Figure 1 shows that most papers (quantitative and qualitative pooled) concerned fertility and religion in Nigeria, Ghana and Kenya, but we also found studies in 32 other countries in SSA.

Quantitative studies of fertility

Figure 2 shows that persons affiliated with African Indigenous Religions (AIRs) had higher fertility than Christians in 21 countries that measured fertility for both religious groups. The difference was largest in Liberia, followed by Sierra Leone, Kenya, Zambia and Guinea, with fertility differences of 50% or larger. Zimbabwe, Lesotho, Chad, Mozambique, Benin and Namibia had the smallest magnitude of difference between groups, with fertility differences of 10% or below. The average fertility difference across all countries is 26%. Thus, the results show a consistent difference in fertility between persons affiliated with AIR and Christians in SSA.

Figure 3 shows that Muslims had higher fertility than Christians in 27 countries that measured fertility for the two religions, except Uganda and Zimbabwe with a weak opposite trend. Gabon displayed the largest difference of 36%. Rwanda, Tanzania, Ivory Coast, Burkina Faso, Central African Republic, Chad and Mozambique displayed the smallest difference of less than 10%. Although Uganda and Zimbabwe were the only countries where Christians had higher fertility than Muslims, the difference was only 2% for both

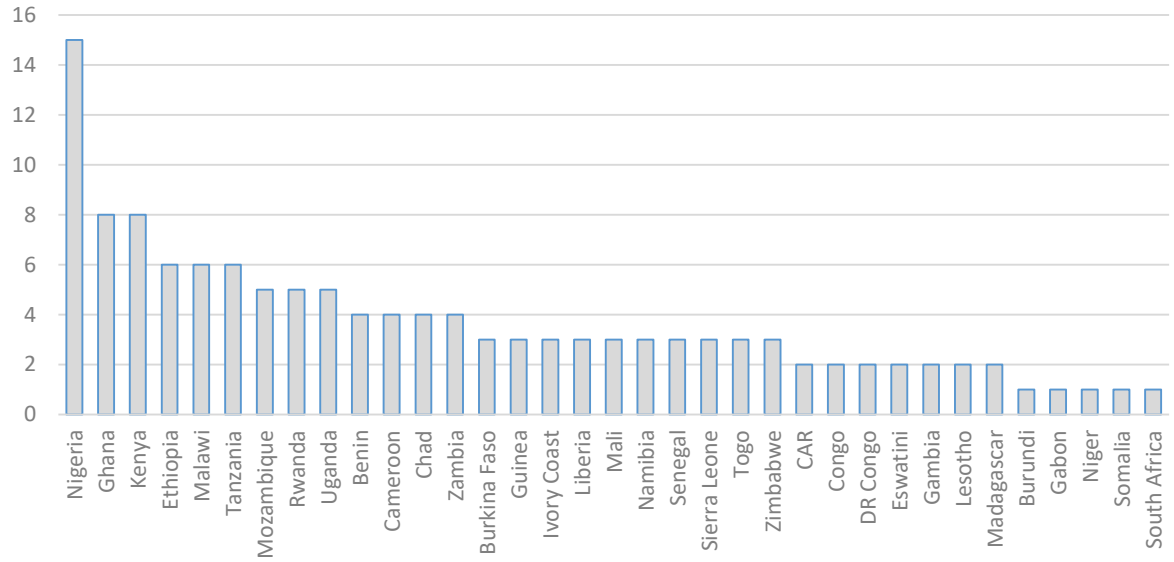

Figure 1. Most quantitative and qualitative papers identified concerned fertility and religion in Nigeria, Ghana and Kenya, but also in 32 other countries. For nine countries, no such paper was found or included in the review (Angola, Botswana, Djibouti, Equatorial Guinea, Eritrea, Guinea-Bissau, Mauritania, South Sudan, Sudan).

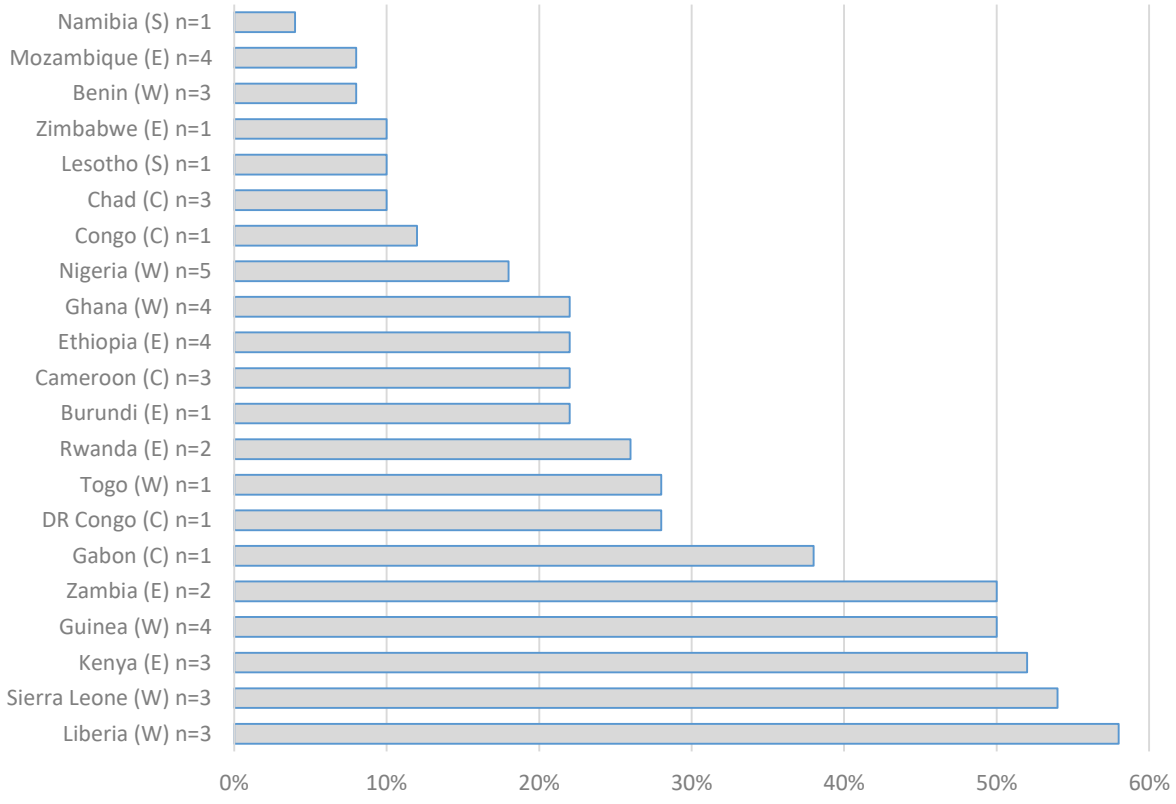

Figure 2: Mean fertility differences between African Indigenous Religions (AIR) and Christians. AIR had higher fertility than Christians across all countries with identified studies. The bar indicates the magnitude of fertility difference in percent between AIR and Christians. Letter in parentheses refers to region (W = Western; C = Central; E = Eastern; S = Southern). [n = No. of papers.]

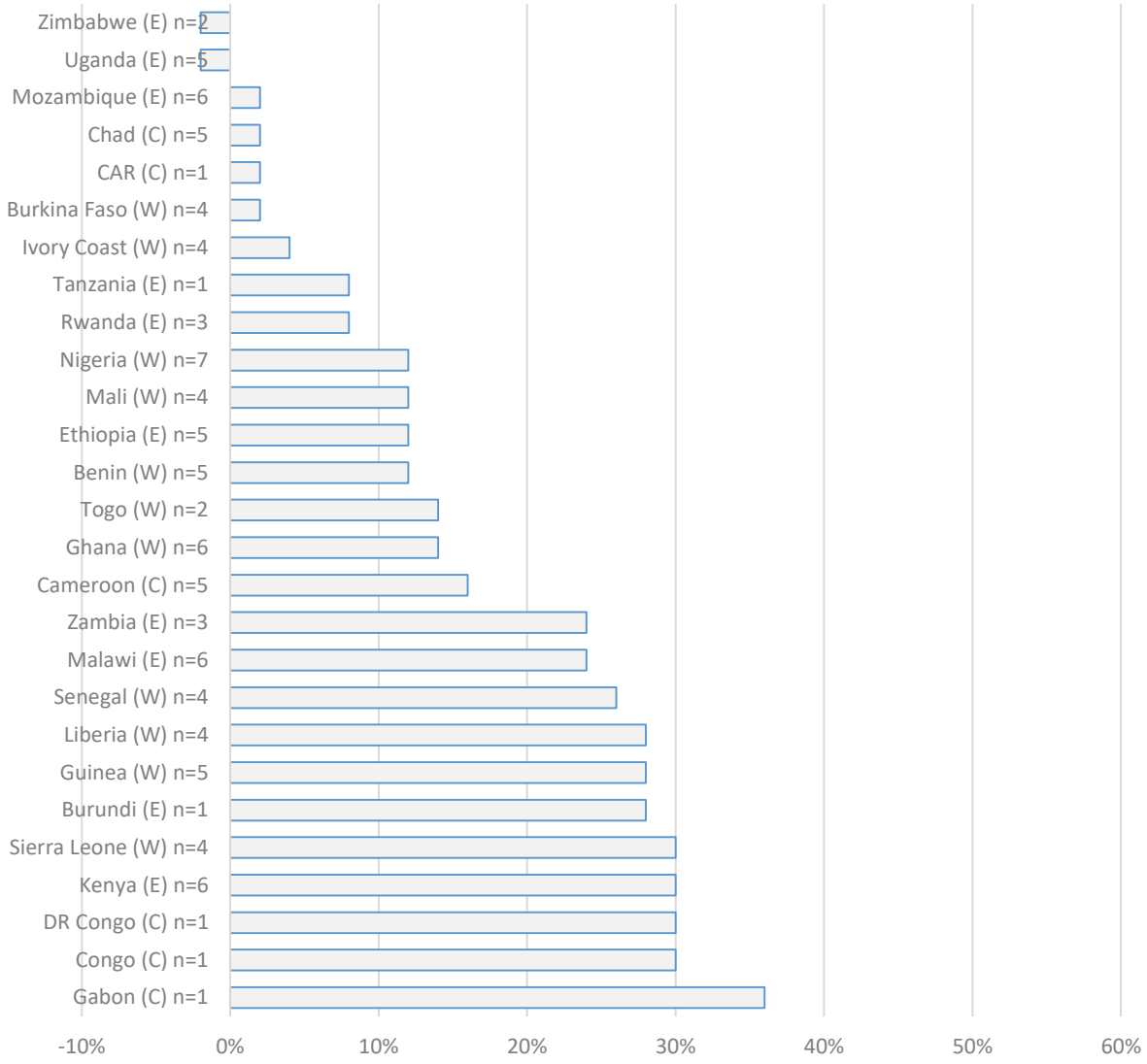

Figure 3: Mean fertility differences between Muslims and Christians. Countries where Muslims had higher fertility than Christians to the right; countries where Christians had higher fertility than Muslims is presented to the left. The bar indicates the magnitude of fertility difference in percent between Muslims and Christians. Letter in parentheses refers to region (W = Western; C = Central; E = Eastern; S = Southern). [n = No. of papers.]

nations. The average fertility difference across all countries is 16%. The results indicate a difference in fertility between Muslims and Christians in 25 of 27 countries, with the latter again having lowest fertility in SSA.

Figure 4 shows that Muslims had higher fertility than persons affiliated with African Indigenous Religions (AIR) in 8 countries, while the opposite was true in 10 countries. Zambia displayed the largest difference of 30% with persons affiliated with AIR having higher fertility than Muslims. Congo had the largest difference of 18% for the opposite trend. All other countries had a fertility difference of 10% or less. The fertility difference in Benin was 0% as both religions had equal levels of fertility. The average fertility difference across all countries is 2%. The results indicate that, except in Congo and Zambia, the difference in fertility between Muslims and persons affiliated with AIR is small and inconsistent in SSA.

Figure 5 shows that, among Christians, fertility was similar for Catholics and Protestants, with minor differences only. Ivory Coast and Lesotho had the largest difference of 12% for both countries with Catholics having higher fertility than

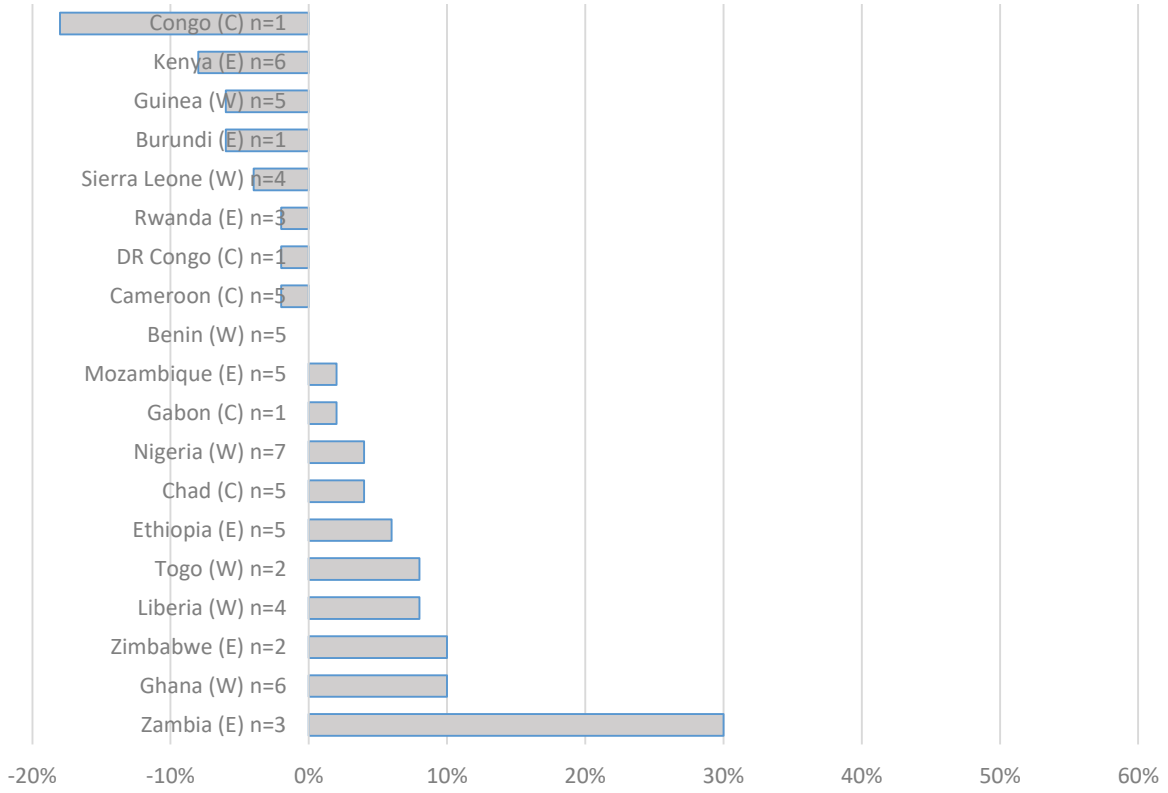

Figure 4: Fertility differences between Muslims and African Indigenous Religions (AIR). Countries where AIR had higher fertility than Muslims to the right; countries where Muslims had higher fertility than AIR to the left. The bar indicates the magnitude of fertility difference in percent between between Muslims and AIR. Letter in parentheses refers to region (W = Western; C = Central; E = Eastern; S = Southern). [n = No. of papers.]

Protestants. All other countries had a fertility difference of less than 10%. Burkina Faso, Burundi, Ghana, Namibia and Togo had a difference of 0% as both denominations had equal levels of fertility. The average fertility difference across all countries is 0%. These results suggest no, or only small differences in fertility between Catholics and Protestants in SSA.

To summarise so far, persons affiliated with African Indigenous Religions (AIR) had higher fertility than Christians in 21 countries that measured fertility for both religious groups Muslims had higher fertility than Christians in countries that measured fertility for both groups, except in Uganda and Zimbabwe, indicating an average difference in fertility between the two religions. Differences in fertility between Muslims and adherents of AIR were small and inconsistent. Fertility was similar for Catholics and Protestants with no, or only small differences.

Qualitative studies of fertility

Fifteen qualitative studies indicated influence of religion on fertility for Ethiopia (n=2), Kenya (n=2), Nigeria (n=4), Malawi (n=1), Somalia (n=1), Tanzania (n=4) and Uganda (n=1). The theme of religion was mentioned by respondents 13 times, 11 of which related to high fertility while only two mentions in Nigeria and Tanzania related to limitation of fertility (Figure 6). Religion was not mentioned as an influence on fertility in the Malawi study.

In the more detailed analysis of themes, frequently mentioned ones relating to increasing fertility were religion, polygyny and social status (Figure 7). Religion was cited in all countries studied, except Malawi. Christian and Muslim respondents both believed that children are God's gift and that they should have as many children as possible. Polygyny was mentioned in Kenya,

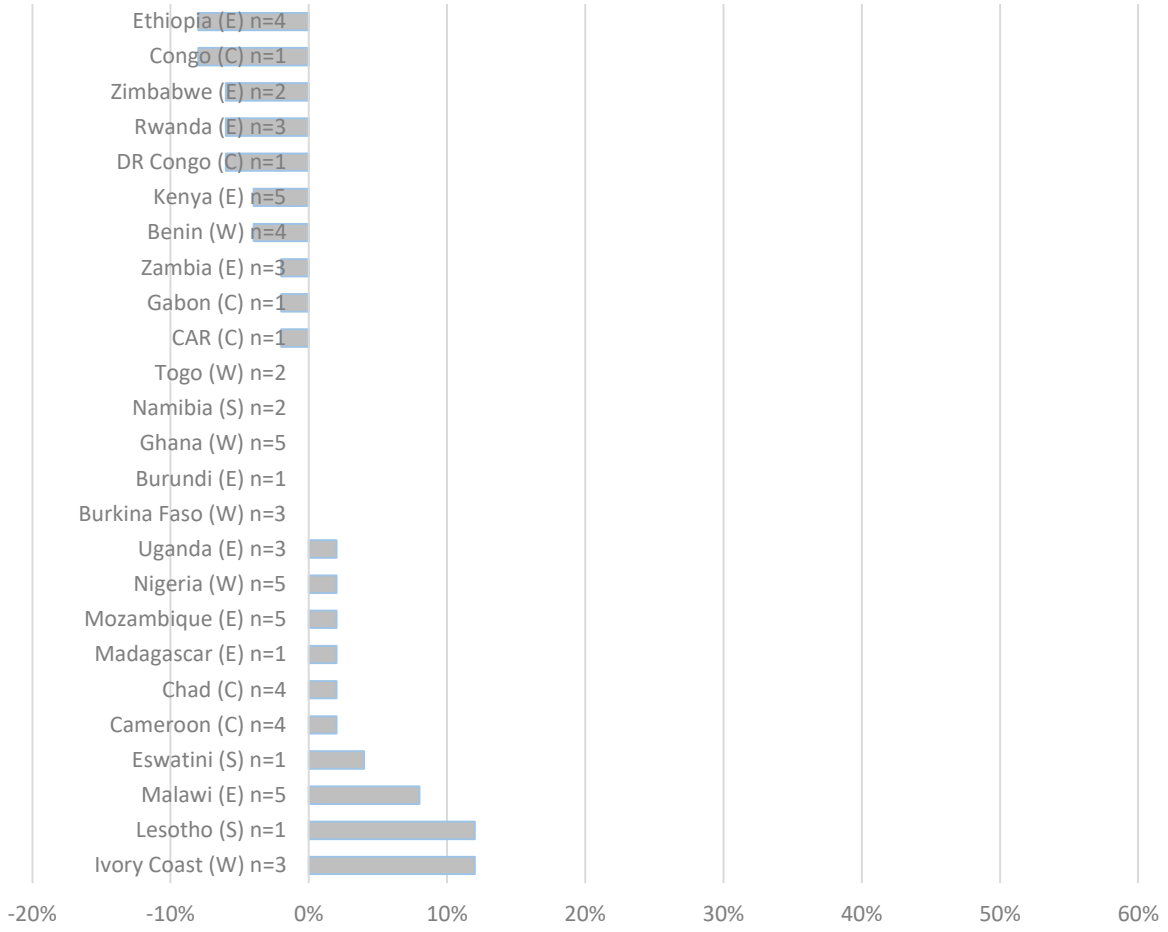

Figure 5: Fertility differences between Protestants and Catholics. Countries where Catholics had higher fertility than Protestants to the right; countries where Protestants had higher fertility than Catholics to the left. The bar indicates the magnitude of fertility difference in percent between Protestants and Catholics. Letter in parentheses refers to region (W = Western; C = Central; E = Eastern; S = Southern). [n = No. of papers.]

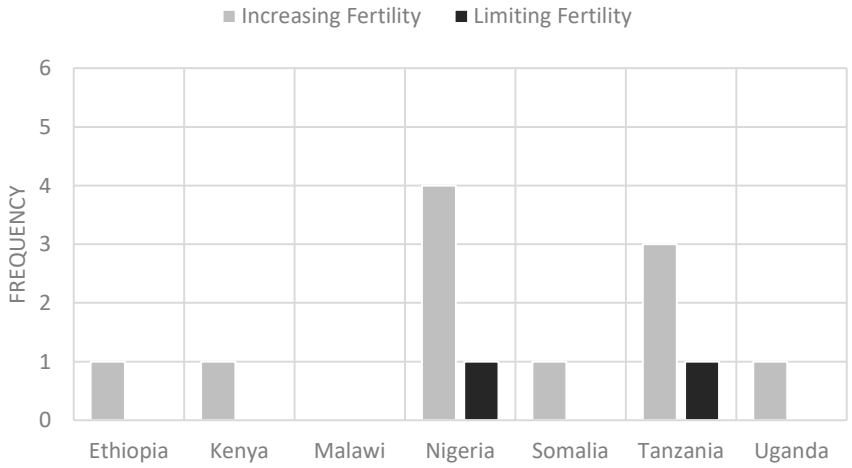

Figure 6: Frequency of religion mentioned as a factor for fertility; either "increasing fertility" or "limiting fertility", in qualitative papers

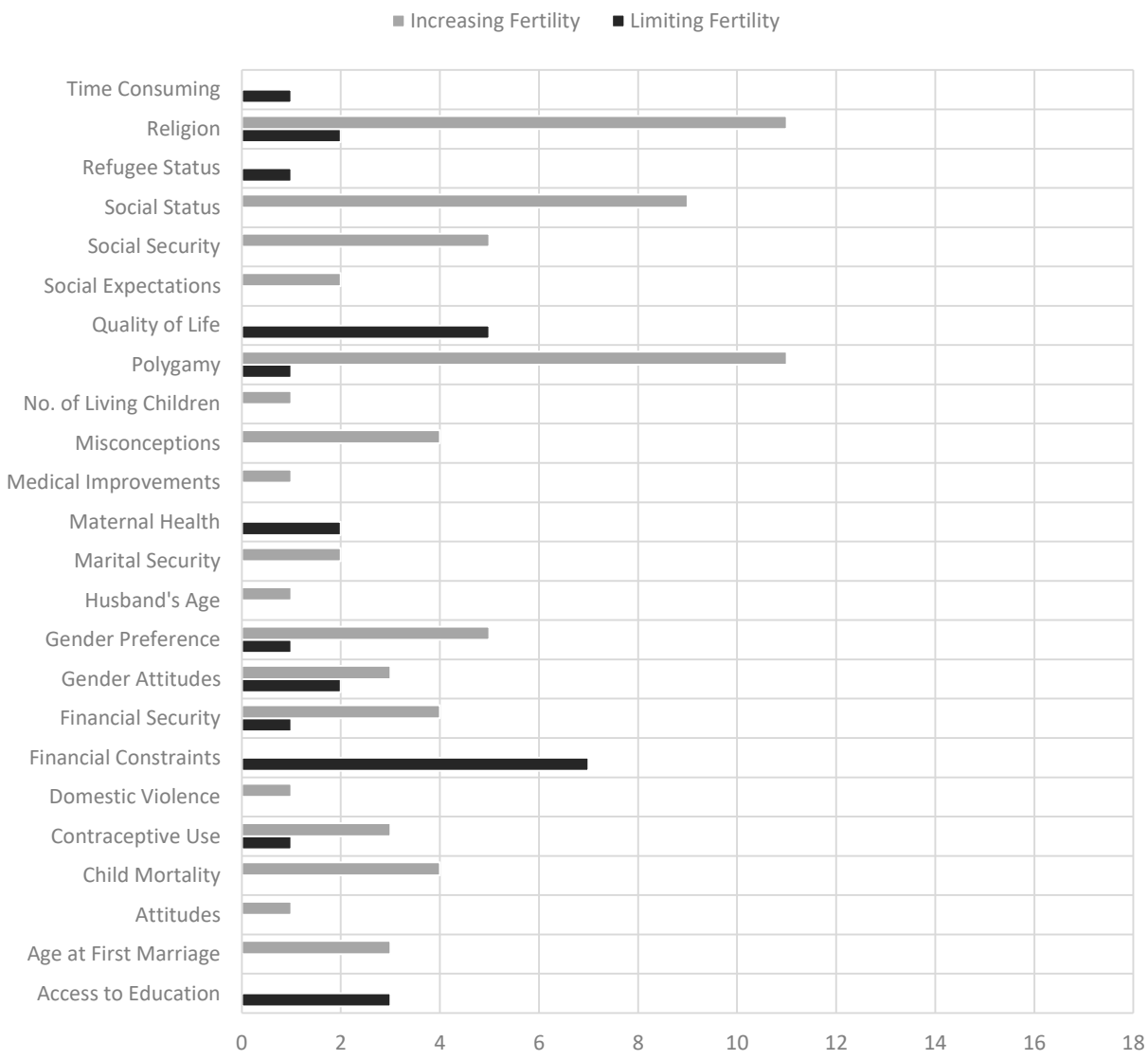

Figure 7: Total frequencies of all themes relating to fertility in qualitative papers

Malawi and Nigeria. Respondents stated that polygyny fuelled competition between co-wives and that the more children each co-wife had, the more financial support they would inherit. Having more children would also prevent husbands from taking on additional wives. Some women also perceived that by having more children, they would come across as more attractive to their husbands. Social status was cited in Kenya, Malawi, Nigeria and Tanzania. Respondents reported that for men, the more children a man had, the more respected he was in the community as men with many children were viewed as powerful, proud and rich.

Common themes mentioned as factors relating to limiting fertility were financial constraints and quality of life (Figure 7). Financial constraints were mentioned in Ethiopia, Kenya, Malawi, Nigeria and Tanzania; quality of life in Ethiopia and Tanzania. Respondents commented that a large number of children resulted in poor living standards, and that having too many children meant that families could not pay school fees, consequently leaving children uneducated and not improving living conditions in the future. Large family sizes can cause stresses on men as breadwinners of the family while having fewer children improves living and hygiene standards and allows each child to receive more attention. Overall, themes relating to increasing fertility (n=71) were mentioned more often than themes relating to

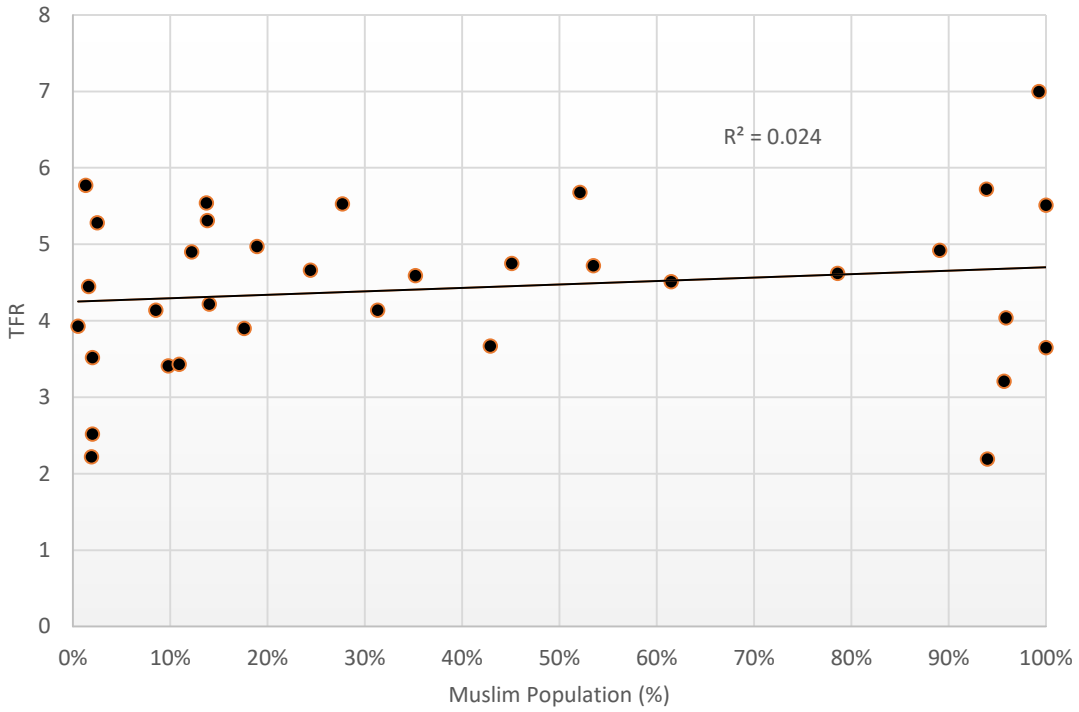

Figure 8: TFR has a weak positive relationship with Muslim populations (%) across SSA. Each dot represents one country, and r^2 is the coefficient of determination

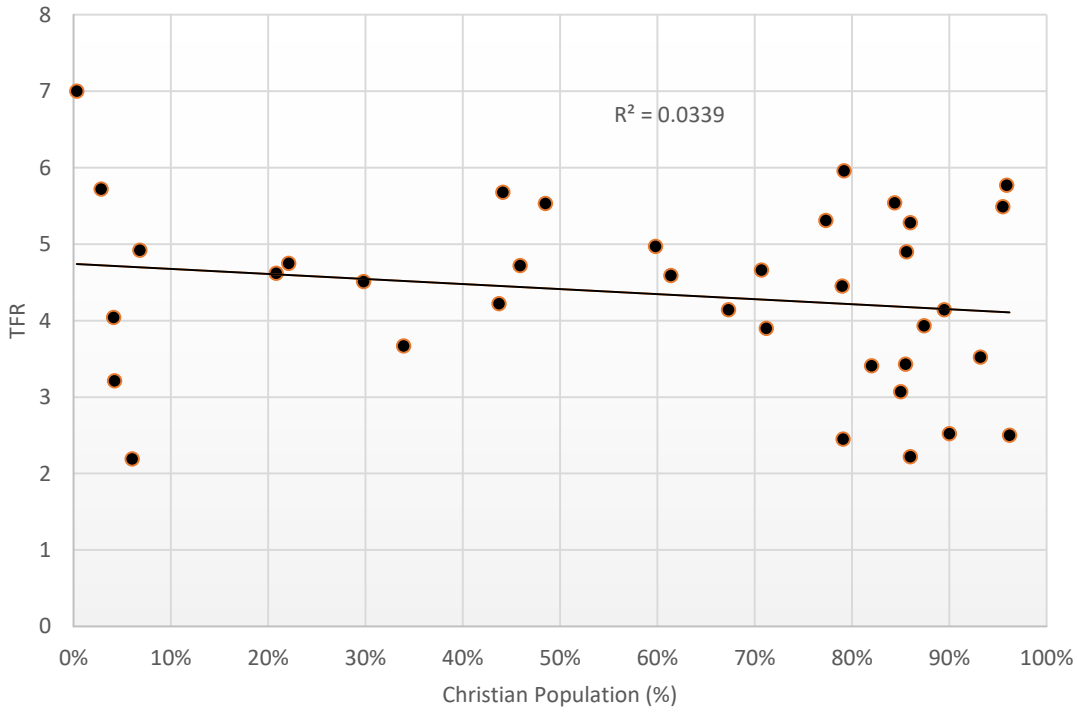

Figure 9: TFR has weak negative relationship with Christian populations (%) across SSA

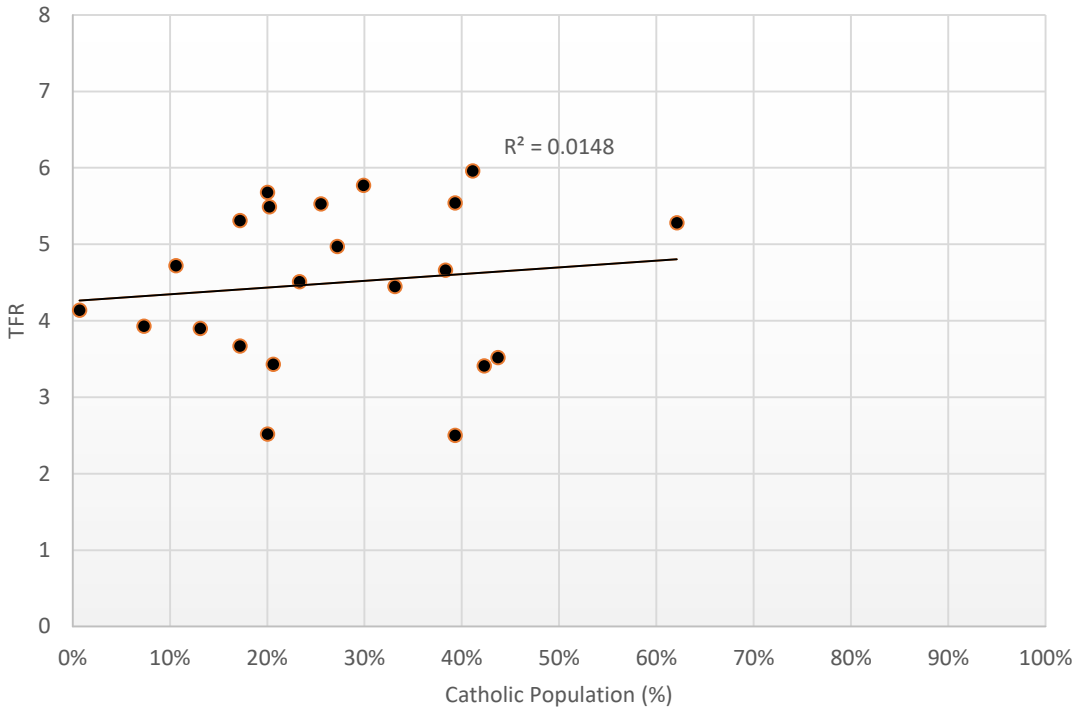

Figure 10: TFR has positive relationship with Catholic population (%)

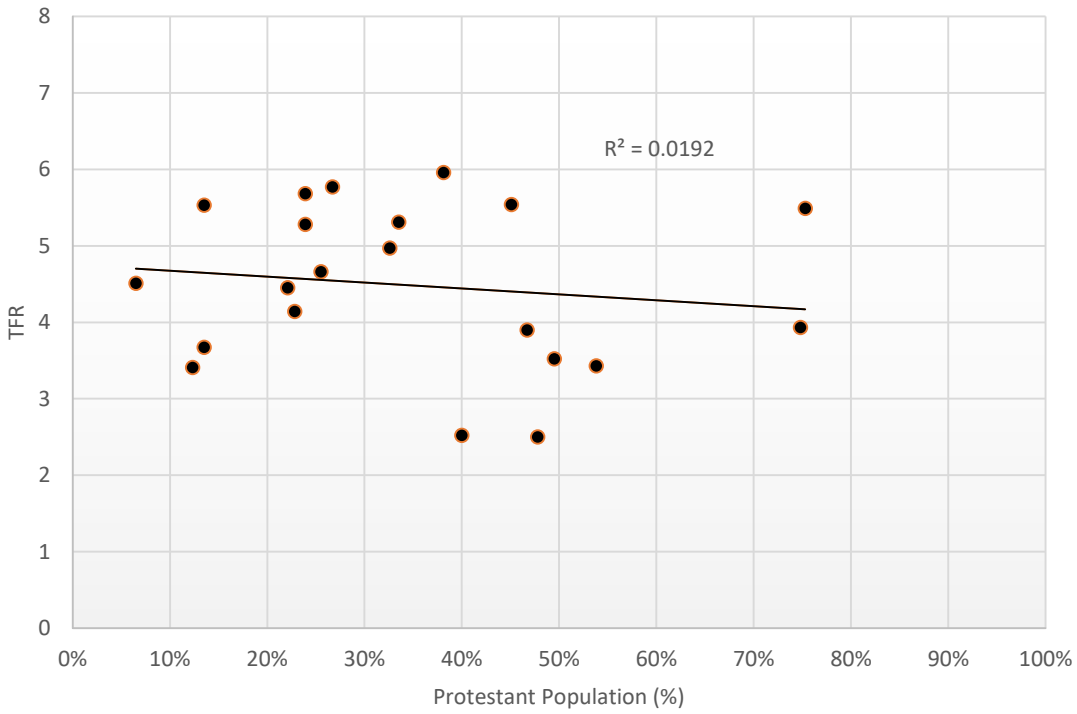

Figure 11: TFR has negative relationship with Protestant population (%)

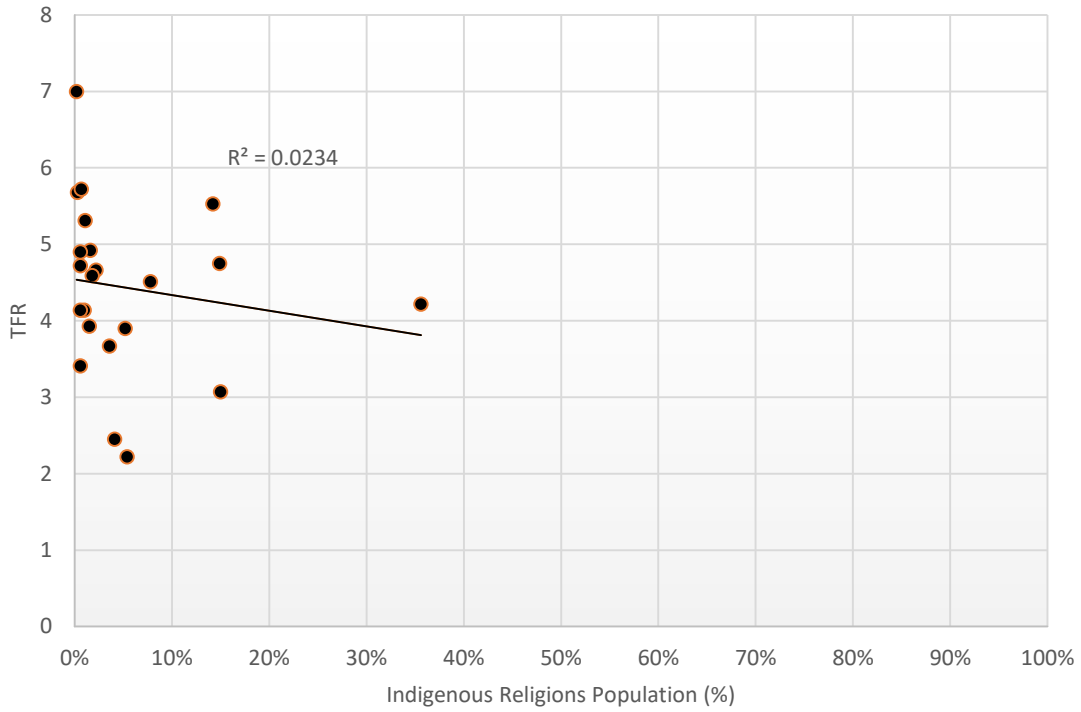

Figure 12: TFR has negative relationship with Indigenous Religions population (%)

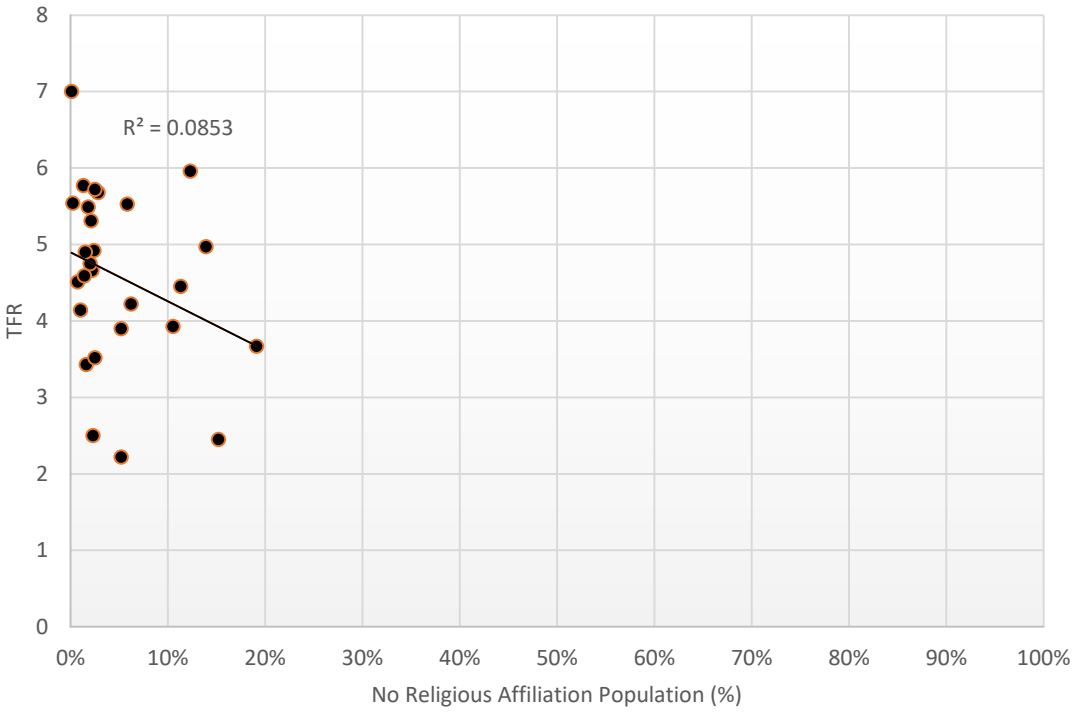

Figure 13: TFR has negative relationship with non-religious affiliation population (%)

limiting fertility (n=27). For more information, see Appendix C and D.

To sum up, religion, polygyny and social status were frequently related to increasing fertility, financial constraints and quality of life were frequently related to limiting fertility.

TFR and proportion of religious population

TFR is weakly but positively related to the percentage of Muslims in countries in SSA (Figure 8). On the other hand, TFR is weakly and negatively related to the percentage of Christians (Figure 9). This latter trend is not consistent for the two major Christian denominations: TFR is (weakly) positively associated with the percentage of Catholics (Figure 10), while the opposite is true for Protestants (Figure 11). TFR is negatively related to the percentage of the population that follows African Indigenous Religions (Figure 12), but note that these country populations are smaller. Finally, the percentage of the non-religious population (also small) is negatively associated with TFR (Figure 13). The coefficient r^2 indicated that all relationships were weak (about 2% to 3.4% of the variance explained), but TFR versus non-religious population had r^2 of 8.5%.

Discussion

Research questions

To answer our three questions for this review, firstly we find that followers of African Indigenous Religions (AIR) seem to have, on average, highest fertility in Sub-Saharan Africa, next comes Islam, and then Christianity. As far as we know, the result for AIR is new. The result that Muslims have higher fertility than Christians was expected and is quite strong, with two exceptions: Uganda and Zimbabwe, showing a small difference between these two religions. On average, Catholics and Protestants hardly differed in fertility. Secondly, the qualitative papers suggest that religion is one major factor among others, potentially increasing fertility or retarding its present (slow) decline in many countries in SSA. Finally, the regressions for TFR versus religions, although showing weak relations, suggest that countries more strongly dominated by Islam tend to have higher TFR, while the reverse was the case for Christianity. This is not surprising, as the proportions largely mirror each other. TFR was most negatively associated with the (small) non-religious populations in the countries.

Comparison with earlier studies, and changes

A report from Pew Research Center[32] is broadly consistent with our results: TFR in SSA in 2015-2020 was 5.6, 5.1, 4.5 and 4.3 for Muslims, Folk religions, Christians and Unaffiliated, respectively. In contrast to what our review suggests, Folk religions had lower TFR than Muslims, which may be due to the exact denominations and studies included. Westoff and Bietsch[15] study comprised 20 countries in SSA and DHS surveys 2004-2014 (mostly 2010-2013), with data for three years prior to each survey. TFR was higher for Muslims than Catholics and other Christians (pooled) in most countries (15), similar in 2 (Mozambique, Burundi), while in 3 countries (Uganda, Chad, Mali) Muslims had lower TFR than Christians. The result for Uganda is similar to ours, for Chad we found weak tendency in the other direction, whereas in Mali we found higher fertility among Muslims than Christians. We could confirm the result for Mozambique where TFR for the groups was similar, whereas for the Burundi we found higher TFR among Muslims. Using DHS surveys 1995-2007, Heaton[17] reported lower TFR for Muslims than Christians in Chad. He also found small differences for Uganda and Mozambique, suggesting these patterns have lasted at least 20 years. Like in our review, Heaton[17] reported higher fertility among Muslims than Christians in Mali (Burundi was not included).

For the 15 countries with higher TFR among Muslims in Westoff and Bietsch's[15] study, comparisons are possible with our results (for 15 countries) and Heaton's[17] (for 9 countries). Caution is needed, since the data sets, and fertility measures, partly differ. Most of the 15 countries seem to show relatively similar differences over time, but for Gabon and Liberia, Muslim fertility is possibly higher in our study. Adding possibly similar change in Mali and Burundi, there may be a trend in SSA of stabilized or even increasing fertility among Muslims.

The high fertility of followers of African Indigenous Religions (AIR) is of interest for instance if these presently minor religions would increase. Historically, forms of AIR increased during the 19th and 20th century, more recently tending to mix with charismatic forms of

Christianity and Islam[22,33]. Folk religion and Islam are older than Christianity in SSA (the Orthodox Church in Ethiopia is an exception) and it is plausible that Christianity, as it expanded through European influence, to some extent reduced historically high fertility rates. During the nineteenth century and onwards, the Catholic Church introduced schools and clinics in SSA[34]. Perhaps surprisingly, Protestants and Catholics in SSA have similar fertility, a result similar to that of Heaton[17]. The Vatican's ban on modern contraception might have been counteracted in SSA by the Catholic Churches' support for schooling and health care[34], leading to approximately similar fertility among the two major Christian denominations.

Quantitative studies and differences between countries

The high fertility of Muslims can partly be attributed to the practice of polygyny. The fertility desires of husbands in polygynous marriages are higher than those of husbands in monogamous marriages[35-37]. The higher fertility desires of husbands than wives in Nigeria is also due to gender roles; men with many children are seen as powerful, proud and rich[38-40]. Traditions with men as decision-makers of the household include childbearing and contraceptive use, while women are mostly expected to obey their husband and not assert views on fertility[39,41-42]. Furthermore, competition between co-wives for a larger share of the husband's wealth and attention means that Muslim women tend to exceed their fertility preference. This is reported from Nigeria[36,43] and is supported by several qualitative studies in this review[44-49].

In Ghana, Christians tend to start families later, are less likely to be in formal marriages and polygynous unions, are more likely to get divorced or separated, and are more likely to use contraception than Muslims and those affiliated with AIR[50-52]. This contributes to lower fertility among Christians than followers of Islam and AIR, and remain significant after controlling for e.g. education, residence (rural/urban) and region. However, Christians and Muslims in Ghana were more accepting of contraceptives compared with other countries in SSA[53-54].

In Nigeria, Muslims and those affiliated with AIR had higher fertility than Christians[55]. However, upon closer examination, this trend was not consistent across the country. Adedokun[56] found that AIR followers had the highest fertility in Western Nigeria, followed by Christians and then Muslims, but in certain rural and urban areas, Muslims had the highest fertility, next came Christians and lastly AIR followers. Muslims also had higher number of children ever born (CEB) than Christians, and CEB was higher in the Northeast, which is predominantly Muslim, compared with lower CEB in the Southwest[57]. While a small religious population such as AIR or those that are non-religious cannot influence a country's TFR much, they might have a correlation to other factors. Additional variables that influenced CEB were residence (rural women had higher fertility) and mother's educational level (the higher the education, the lower the CEB).

Zimbabwe is classified by the UN as Eastern Africa, but geographically it is located in the southern-most part of this sub-region, bordering Southern Africa. Zimbabwe is characterised by relatively high level of education[58] and 87% of the population are Christians, with 75% identifying as Protestants. Muslims make up only 0.5% and non-affiliated as much as 10.5%[59]. The average years of schooling in Zimbabwe was 9.0 years, the second highest in SSA after South Africa (9.8 years). These values are similar to the average school years in European countries, which range between 9.0 and 9.9[58]. Zimbabwe also had the second highest percentage of women with completed primary education (78%), after South Africa (86%). This level of education may contribute to relatively low fertility differences among religious groups. In contrast, Muslims in Malawi had relatively low access to schools and relatively high rates of poverty, which probably contribute to larger difference in fertility between Christians and Muslims[32,60].

Uganda is also a primarily Christian; 84% of its population identify as Christian, and 14% as Muslim[59]. However, average years of schooling is 5.4 years, and among women only 33% completed primary education[58] which is likely related to a higher TFR than in Zimbabwe (5.5 vs. 3.9). In a study of 24 SSA countries, contraceptive use increased with school years in the country, but the strength of family planning programs was even more important in raising the level of contraception. Zimbabwe was one of the top countries, while

Uganda was intermediate in contraceptive use, with weaker family planning[12]. As in Zimbabwe, Christians had slightly higher fertility than Muslims. Muhoza et al.[61] report that the poor in Uganda are more aware of the financial difficulties of having too many children than the middle and richer classes, and the poor tend to more often be Muslims[17,62]. Catholics, which comprise 39% of the population, have a high unmet need for family planning[63-64]. These factors probably explain the slightly higher fertility among Christians in Uganda compared with Muslims.

In Chad, while Muslims had higher fertility than Christians, the difference is very small (2%) and both groups show high fertility. Overall, TFR in Chad is 5.7 and the contraceptive prevalence very low, 5.7%[59], the second lowest in SSA after South Sudan (4%). Chad has one of the lowest annual GDP per capita in the world (US$710) and only 24% of the population live in urban areas[59]. Level of education is below average, and low among women[58]. In SSA, fertility correlates negatively with education and GDP per capita[16]. These factors likely contribute to high fertility in Chad, and the relative influence of the different denominations is probably weaker.

The small difference in fertility between Christians and Muslims in Mozambique is likely attributed to the practice of Apostolicism in which high fertility is promoted, contraception forbidden, and polygyny justified (see below).

Quantitative studies and Christian denominations

Some early studies suggested differences in fertility in various directions among Catholics and Protestants across Nigeria[56,65]. In Kenya and Rwanda, Catholics and Protestants desired 0-3 children in both countries[66], with little variation between denominations. However, the mix of different Protestant groups varies considerably within and across countries, and pooling may overlook characteristics related to fertility differences[17].

In Eswatini and Mozambique, Apostolicism demonstrated the highest fertility across the Christian denominations[67-68]. Apostolics in Eswatini and Mozambique comprised about 40% and 15% of the populations, respectively[59]. In Agadjanian & Yabiku's study[67], the share of reproductive life spent in the Apostolic Church was associated with higher completed fertility regardless of other factors, and Apostolics had higher net risk of birth in any given year. Apostolicism in Africa was founded on early native resistance to foreign divinities and by a mixture of Christian and AIR elements[69]. The Apostolic Church strongly promotes fertility and early marriage, and contraception is believed to be against God's will. Gender inequality is prominent, and polygyny justified. Male domination of females and disempowerment of women and girls is celebrated[69]. This explains the high fertility among Apostolics compared with other Christian denominations in Eswatini and Mozambique.

The quantitative studies reviewed suggest that Christian denominations do not differ strongly in fertility level, with the exception of Apostolicism. Variations in fertility between Catholics and Protestants, while small, exists within and across countries. More studies are desirable, for instance of fertility levels of the growing Pentecostal churches in SSA.

Qualitative studies

Many followers of Christianity and Islam stated that contraceptive use contradict religious beliefs, and that their faith encourages them to have many children (e.g. to use up all the eggs that God gave them). Such views were particularly strong in Northern Nigeria, Northern Ghana and Somalia where religiosity is reported to be strong[29]. While these areas are Muslim-dominated, both Christian and Muslim participants believed that children are a gift from God and should not be declined[49]. On the other hand, in Kenya most Muslim leaders agree that family planning is supported by Islam for birth spacing, and that neither the Quran or Sunnah prohibit its use[44]. However, the level of acceptance depends on the form of contraception. Breastfeeding is the most accepted form of birth spacing[70], followed by withdrawal[44,71]. Condom is prohibited as religious leaders state it promotes sexual activity outside marriage[70-71]. Permanent and non-reversible contraceptive methods are not permissible[72-75]. Although oral contraceptives are prohibited in Islam, religious leaders in Somalia agreed that it is permissible for birth spacing[70].

Polygyny was mentioned for both increasing and limiting fertility in Malawi, Nigeria and Uganda. Polygyny is common in Islam where men are allowed to have up to four wives[76], but it

also occurs in Christianity[77-78]. In Izugbara and Ezeh's[45] study, Nigerian women specified that giving birth to more children prevented husbands from taking on more wives. More children mean higher financial responsibility for the husband, as well as a higher share of wealth for the wives[45,79]. In addition, Nigerian women in Sinai *et al.*'s[49] study perceived men to view women more beautifully and love them more if they had more children, particularly if competition between co-wives is involved. These women were therefore less inclined to use contraceptives. In contrast, some women in Malawi stated that having fewer children helped them remain attractive to their husbands, thereby avoiding them taking on a younger second wife[48]. This sentiment was echoed in Nigeria[49]. Therefore, these women were more inclined to use contraceptives.

Among Eritrean and Somali refugees in Ethiopia[28], Somalis cited Islamic religion as a deterrent for use of contraceptives, and inducing its followers to have many children. Many Somali respondents desired large family (up to 15-20 children), despite their refugee status. Somalis felt that religious beliefs outweighed economic concerns as they believed Allah would provide protection. This sentiment was echoed by Somali refugees in Djibouti[80] and Finland[81]. Eritreans, who practiced Christianity, preferred to limit their family (to 3-5 children) due to economic constraints and refugee status, and were not influenced by their religious beliefs. In Tanzania, some Christian respondents stated that family planning is a moral responsibility[82] and that limiting the number of children was in line with religious texts (caring for children, living within one's means). Contraceptives were consistent with these moral standards. Other respondents in Tanzania supported the view that family planning is against their religion; however, they also supported use of family planning given hardships (including economical), and the spread of diseases[83].

The survival of Islam motivated high fertility among Muslim women in Northern Nigeria[45]. Respondents stated that high fertility guarantees the survival of their religion and helps it flourish. However, the women interviewed did not support unregulated childbearing as they were aware of the consequences of poverty, lower quality of life, ill-health and reduced opportunities for their children. The awareness of the dangers of unlimited childbearing is stated to be widespread among women in Northern Nigeria[84].

In Malawi, the majority of Christian participants stated that religion does not influence their need and decision-making for contraceptives. Churches also seemed to tolerate the use of modern contraceptives, though silently[48]. However, in South Africa, respondents felt conflicted and uncertain about how their religious beliefs might impact sex and condom use, as the Catholic Church prohibits use of modern contraceptives as well as premarital sex. Some participants felt that they did not need condom protection as God would protect them. On the other hand, some participants reported that they were able to disassociate their religious beliefs from sex and condom use[85].

In Tanzania, the view that limiting the number of children goes against God's plan was particularly strong for Christians and Muslims in rural areas [38,40,82-83,86]. Previous studies in Sub-Saharan Africa showed that in urban settings, TFR is lower and contraceptive prevalence higher than in rural settings[87]. Those living in urbans areas may have better access to resources for family planning. Tanzania is a deeply religious country with 93% of its population rating religion as very important to them[33]. Women who regularly attend religious services were reported to be less likely to receive family planning information from health care facilities, compared to other women[88]. Some Christian participants felt it was not appropriate to discuss family planning in religious settings, others were open to this[83]. Outreach to Church leaders overcame barriers to the uptake of family planning, including opposition by male partners and compatibility with religious faith[82]. This demonstrates the strong influence of religious leaders on communities, and the potential to raise contraceptive prevalence rates, and to reduce fertility.

In Ethiopia, Orthodox Christians form the largest religious group (43.5%)[89]. It is considered highly religious, with 78% attending Church on a weekly basis[32]. Although the Orthodox Church was once against the use of contraceptives, it has since downplayed this rhetoric, and 57% higher contraceptive use was reported among Orthodox Christians compared to Muslims and Protestants[90]. A third of the respondents in one study[91] specified not wanting to use family planning because they believed the Orthodox Church did not allow it;

another third interpreted the Orthodox Church's silence on the issue to mean they were allowed to use family planning. The final third believed the Church was still against contraceptive use, but still decided to use it, due to their need. Although women were much more religious than men in this study, many Orthodox women ignored religious disapproval of contraceptive use, indicating a high level of female empowerment of Orthodox women in Ethiopia. Participants from both rural and suburban areas stated that if they could not afford children, then they should not have any. In Addis Ababa, where TFR is very low (1.9), women with low or no levels of education and who had access to less than a dollar per day had longer birth intervals than women who were better-off[92]. It is possible that when children become more educated and the economic situation improves, fertility would increase again[91]. This causality is applicable when economic considerations are central.

The qualitative studies strongly suggest that religion/religiosity can increase fertility, but also demonstrate mixed results and views on the influence of religion on fertility and contraceptive use. While some respondents strongly believed that family planning and limiting fertility were forbidden in their religion, some felt religion did not influence their decision, while still others felt conflicted on the issue. Stronger religiosity is associated with less contraceptive uptake, or hesitation. Economic constraints also influenced contraceptive uptake, regardless of religion. Ultimately, religious leaders can probably strongly influence a community and spread messages on family planning that could improve contraceptive use, and reduce fertility.

Limitations

There are at least six limitations. First, for 9 of 44 countries classified as continental SSA, the search of databases revealed no relevant studies. Second, countries with more studies provide more representative results than countries with fewer studies. Third, there is a lack of longitudinal data due to the relatively recent attention to the influence of religion on fertility in SSA. Fourth, the grouping of religions does not allow analysis of distinctions within Islam and Christianity, except Catholics and Protestants, which we analyze. For example, as described by Heaton[17], the mix of Protestant groups varies across countries, and the denominations may differ in fertility (see also Discussion). In Lebanon, Chamie[31] found differences in fertility between the Shias and Sunnis of Islam. Fifth, many papers focused on married women, and we miss information on e.g. adolescents and particularly married men, who are often household decision-makers. Nevertheless, the review compares the major religions in SSA, for which we could identify relationships to fertility.

Conclusions and implications

This review shows that followers of African Indigenous Religions and Islam have higher fertility rates than followers of Christianity in Sub-Saharan Africa. For Christian denominations, fertility differences between Catholics and Protestants are small and inconsistent across countries. Followers of the Apostolic Church had highest fertility among Christian groups. The findings suggest that fertility is influenced by the type of religion, although other factors may override its importance for fertility in some countries and situations. Moreover, focus group discussions and in-depth interviews indicate that a religion's stance and teaching on fertility, family planning and contraception play a powerful role. Religious leaders across all religions are influential, and many participants were inclined to follow the recommendations of religious leaders regarding fertility and contraceptive use.

In addition, religion and the interaction between religion and socioeconomic variables are important when assessing influences on fertility. When a country is facing extreme poverty and low levels of education, influences of religion on fertility may not be as strong as certain socioeconomic factors. When economic constraints and education levels are not as dire, religion may more strongly influence fertility. These possibilities deserve more studies.

The results have significant implications for long-term changes in the relative size of religious groups in SSA. Higher fertility of Muslims relative to Christians can lead to stronger population growth among the former, as projected for Nigeria that might become a Muslim-dominated country[93-94]. Fertility differences in several countries will add to the challenge of improving educational opportunities and family planning for

Muslim populations[17,58]. Of special interest, also deserving more study, is the high fertility among followers of African Indigenous Religions.

Unless attitudes towards and preferences for high fertility change, population size in SSA will in the long run continue to increase, exacerbating the devastating impact of population increase on the environment and people[95]. Religious leaders need to be approached, informed and educated about family planning services and their benefits. If such efforts are successful, they can spread messages about family planning to their followers, thereby promoting higher contraceptive use and lower fertility.

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Appendices

Appendix A: Quantitative Papers

Table A: Characteristics of sample populations and study design of quantitative papers of fertility. – "Reproductive ages from the general population". "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Author & Year	Focus Region / Country	Focus Religion(s)	Focus Contraception Type(s)	Method	Dependent Variable	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Adebowale & Palamuleni (2015)	Malawi	Anglican; Baptist; Catholic; Muslim; Presbyterian; Protestant; Seventh Day Adventist; Other Christian; Other	Modern Contraceptives	DHS Data Examination	Fertility Desires	1,739	15-49	Females	Married (first and only marriage), non-menopausal, not sterilised, fecund, and have at least 5 children.	Across Malawi	Rural and Urban	2010	Logistic Regression
Agadjanian & Yabiku (2014)	Mozambique	Apostolic; Catholic; Pentecostal; Protestant; Zionist; No Religion	All Contraceptives	Questionnaire	Children Ever Born	2,019	18-50	Females	Ever in a union.	Chibuto District, Gaza Province, Mozambique	Rural and Urban	2008	Logistic Regression; Poisson Regression
Agyei-Mensah & Owoo (2015)	Ghana	Christian; Muslim; Indigenous; No Religion	Modern Contraceptives	DHS Data Examination	No. of Births in Last 5 Years	Unspecified	15-49	Females	N/A	Across Ghana	Rural and Urban	2008	Poisson Regression
Akintunde, *et al.* (2013)	Nigeria	Christian; Muslim; Indigenous; Other	All Contraceptives	Questionnaire	Children Ever Born	2,197	15-49	Males and Females	N/A	Akinyele LGA, Oyo State, Nigeria	Unspecified	Unspecified	Multiple Regression; Chi-Square; ANOVA

Author & Year	Focus Region / Country	Focus Religion(s)	Focus Contraception Type(s)	Method	Dependent Variable	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Babalola, *et al.* (2017)	Nigeria	Christian; Muslim	All Contraceptives	Survey (non-DHS) Data Examination	Fertility Desires	1,921	15-49	Females	In a union, fecund and desired no more children at baseline.	Abuja, Benin City, Ibadan, Ilorin, Kaduna and Zaria, Nigeria	Urban	2010-2014	Multivariable Logistic Regression
Chemhaka & Odimegwu (2020)	Eswatini	Apostolic; Catholic; Muslim; Pentecostal; Protestant; Indigenous; Other; No Religion	All Contraceptives	DHS Data Examination	Children Ever Born	4,112	15-49	Females	Sexually experienced.	Across Eswatini	Rural and Urban	2006-2007	Multilevel Poisson Regression
Garenne (2012)	34 Countries in SSA *(including 2 island nations)*	Christian; Muslim	Modern Contraceptives	DHS Data Examination	TFR	5,217-60,556 *(country range)*	20-49 *(females)*; 20-59 *(males)*	Males and Females	N/A	Across selected countries.	Rural and Urban	1991-2009	Multivariate Linear Regression
Heaton & Darkwah (2011)	Ghana	Catholic; Muslim; Protestant; Indigenous; Other Christian; No Religion	Modern Contraceptives	DHS Data Examination	Children Ever Born	4,557 (1993); 4,843 (1998); 5,691 (2003)	15-49	Females	N/A	Across Ghana	Rural and Urban	1993, 1998, 2003	Cox Regression; Logistic Regression; Ordinary Least Squares Regression

Author & Year	Focus Region / Country	Focus Religion(s)	Focus Contraception Type(s)	Method	Dependent Variable	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Heaton (2011)	30 Developing Countries, Including 22 in SSA	Catholic; Christian; Muslim; Protestant	Modern Contraceptives	DHS Data Examination	No. of Births in Last 5 Years	3,223-12,195 *(country range)*	15-49	Females	In a union.	Across selected countries.	Rural and Urban	1995-2007 *(across the surveys)*	Poisson Regression
Ibeji, *et al.* (2020)	Nigeria	Christian; Muslim; Other	N/A	DHS Data Examination	Children Ever Born	~30,000	15-49	Females	N/A	Across Nigeria	Rural and Urban	2013	Negative Binomial Regression; Poisson Regression
Mberu & Reed (2014)	Nigeria	Catholic; Muslim; Protestant; Other Christian; Indigenous; Other	All Contraceptives	DHS Data Examination	Children Ever Born	5,533 (2003); 25,363 (2008); 26,643 (2013)	15-49	Females	Ever married.	Across Nigeria	Rural and Urban	2003, 2008, 2013	Multiple Linear Regression
McGovern, *et al.* (2019)	Nigeria	Christian; Muslim	All Contraceptives	DHS Data Examination	TFR	38,948	15-49	Females	Married.	Across Nigeria	Rural and Urban	2013	Crude Linear Regression; Multivariate Linear Regression
Muhoza (2019)	Kenya; Rwanda	Catholic; Muslim; Protestant; Other	All Contraceptives	DHS Data Examination	Fertility Desires	9,009 (Kenya); 6,890 (Rwanda)	15-49	Females	In a union.	Across Kenya and Rwanda	Rural and Urban	2014 (Kenya); 2014/15 (Rwanda)	Multinominal Logistic Regression

Author & Year	Focus Region / Country	Focus Religion(s)	Focus Contraception Type(s)	Method	Dependent Variable	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Muhoza, *et al.* (2014)	Kenya; Rwanda; Tanzania; Uganda	Catholic; Muslim; Protestant	N/A	DHS Data Examination	Fertility Desires	4,356 (Kenya); 6,337 (Rwanda); 6,022 (Tanzania); 4,868 (Uganda)	15-49	Females	Married or in a union with at least 1 child.	Across Kenya, Rwanda, Tanzania and Uganda	Rural and Urban	2008/09 (Kenya); 2010 (Rwanda); 2005 (Tanzania); (2011) Uganda	Logistic Regression
Nansubuga, *et al.* (2017)	22 Countries in SSA	Catholic; Muslim; Pentecostal; Protestant; Major Christian (country specific); Other Christian; Indigenous; Other	All Contraceptives	DHS Data Examination	TFR	2,891-18,794 *(country range)*	15-49	Females	N/A	Across selected countries.	Unspecified	2010-2017	Poisson Regression
Ntoimo & Mutanda (2017)	Ghana; Nigeria; Zambia	Catholic; Muslim; Other Christian; Indigenous; Other	All Contraceptives	DHS Data Examination	Children Ever Born	1,785 (Ghana); 3,185 (Nigeria); 3,175 (Zambia)	35< (Wives)	Males and Females	Couples in monogamous union.	Across Ghana, Nigeria and Zambia	Rural and Urban	2003, 2008, 2014 (Ghana); 2003, 2008, 2013 (Nigeria); 2001/02, 2007, 2013/14 (Zambia)	Poisson Regression

Author & Year	Focus Region / Country	Focus Religion(s)	Focus Contraception Type(s)	Method	Dependent Variable	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Odusina, *et al.* (2020)	Nigeria	Christian; Muslim; Indigenous / Other	All Contraceptives	DHS Data Examination	Fertility Desires	6,813 Couples	15-49	Males and Females	N/A	Across Nigeria	Rural and Urban	2018	Logistic Regression
Stonawski, *et al.* (2016)	Nigeria	Christian; Muslim (Sharia / non-Sharia)	All Contraceptives	DHS Data Examination	TFR	8,393 (1990); 32,506 (2008); 38,231 (2013)	15-49	Females	Married or cohabiting and sexually active.	Across Nigeria	Unspecified	1990, 2003, 2008, 2013	Unspecified
Westoff & Bietsch (2015)	17 Countries in SSA	Muslim; Non-Muslim	All Contraceptives	DHS Data Examination	Fertility Desires; No. of Births in Last 5 Years; TFR	2,809-26,163 *(country range)*	15-49	Females	N/A	Across selected countries.	Rural and Urban	2004-2013	Multivariable Logistic Regression

Appendix B: Qualitative Papers

Table B: Characteristics of sample populations and study design of qualitative papers of fertility and contraceptive use. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Author & Year	Country	Focus Religion(s)	Focus Contraception Type(s)	Methodological Approach	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Abdi, *et al.* (2020)	Kenya	Muslim	All Contraceptives	Focus Group Discussions; In-Depth Interviews	93	15-54	Males and Females	N/A	Lamu and Wajir Counties, Kenya	Unspecified	2018	ATLAS.ti
Adefalu, *et al.* (2019)	Nigeria	Muslim; Other	Modern Contraceptives	Focus Group Discussions; In-Depth Interviews	250	15-45	Females	N/A	Sokoto and Kebbi States, NW Nigeria	Rural and Urban	Unspecified	NVivo
Akinyemi, *et al.* (2020)	Nigeria	Muslim	Injectable Contraceptives	Focus Group Discussions; In-Depth Interviews	102	Unspecified	Males and Females	N/A	Gombe, Nigeria	Unspecified	2016	NVivo
Aristide, *et al.* (2020)	Tanzania	Protestant	All Contraceptives	Focus Group Discussions	100	26-46	Males and Females	N/A	Rural villages in NW Tanzania	Rural	2019	NVivo
Davidson, *et al.* (2017)	Ethiopia; *(Eritrean & Somali Refugees)*	Christian; Muslim	Long-Acting Reversible Contraceptives	Focus Group Discussions; In-Depth Interviews	11,000-25,000 *(camp pop. range)*	18-44 *(females)*; 20-50 *(males)*	Females *(IDIs)*; Males and Females *(FGDs)*	Refugees in Ethiopia (from Eritrea and Somalia); Married *(males and females)*, non-pregnant *(females)*, and residence of 6+ months *(males)*.	2 Eritreans and 2 Somali refugees camps in Northern and Eastern borders of Ethiopia	Unspecified	2014	ATLAS.ti

Author & Year	Country	Focus Religion(s)	Focus Contraception Type(s)	Methodological Approach	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Egeh, *et al.* (2019)	Somalia	Muslim	All Contraceptives	In-Depth Interviews	17	28-59	Unspecified	Islamic religious leaders.	Somaliland, Somalia	Unspecified	Unspecified	Transcript-Based Analysis
Izugbara & Ezeh (2010)	Nigeria	Muslim	All Contraceptives	Focus Group Discussions; In-Depth Interviews	336	14-64	Females	Married; also included health care providers, NGO workers, and community leaders.	Jigawa and Kano States, Nigeria	Rural and Urban	2007-2008	Transcript-Based Analysis
Jensen (2017)	Kenya	Christian, Muslim	All Contraceptives	Focus Group Discussions; In-Depth Interviews	FGDs: 170. IDIs: 219 women *(132 first round; 87 second round)* and 25 men *(20 first round; 25 second round)*.	Irrespective	Males and Females	FGDs: Randomly selected. Second round, descendants were also supplemented. IDIs: Randomly selected. In addition, health personnel, teachers, community and religious leaders were interviewed.	Rural villages in Coast and Western Provinces, Kenya	Rural	1988 (Western Province); 1990 (Coast Province); 2011	ATLAS.ti; SPSS

Author & Year	Country	Focus Religion(s)	Focus Contraception Type(s)	Methodological Approach	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Kabagenyi, *et al.* (2016)	Uganda	Catholic; Muslim; Pentecostal; Protestant; Other	Modern Contraceptives	Focus Group Discussions; In-Depth Interviews	154	15-64	Males and Females	N/A	Bugiri and Mpigi Districts, Uganda	Rural	2012	ATLAS.ti
Kok, *et al.* (2020)	Malawi	Catholic; Muslim; Other	Modern Contraceptives	Focus Group Discussions; In-Depth Interviews	123	Unspecified	Males and Females	N/A	Makanjira, Katuli, and Namkumba TAs in Mangochi District, Malawi	Unspecified	2019	NVivo
Mjaaland (2014)	Ethiopia	Muslim; Orthodox; Protestant	Modern Contraceptives	In-Depth Interviews	25 *(women from three generations)*; 270 *(household women)*; 200 *(students)*	Unspecified	Females *(non-students)*; Males and Females *(students)*	N/A	Northwestern Tigray, Ethiopia	Rural and Suburban	2008-2012	Unspecified
Msoka, *et al.* (2019)	Tanzania	Christian; Muslim	All Contraceptives	Focus Group Discussions	20	20-50	Females	Married with 2 or more children.	Bagamoyo and Kisarawe in Pwani, Tanzania	Rural	2017-2018	NVivo
Pallangyo, *et al.* (2020)	Tanzania	Christian; Muslim	Vasectomy	In-Depth Interviews	20	20-50	Females	Married or cohabiting with 2 or more children.	Bagamoyo and Kisarawe in Pwani, Tanzania	Rural	2017-2018	NVivo

Author & Year	Country	Focus Religion(s)	Focus Contraception Type(s)	Methodological Approach	Sample Size	Sample Age (Years)	Sample Gender	Other Specifics of Sample Population	Study Location(s)	Residential Setting	Date(s) of Data Collection	Statistical Approach
Sinai, *et al.* (2019)	Nigeria	Christian; Muslim	All Contraceptives	Focus Group Discussions	81	15-49	Females	Married, non-pregnant, sexually active, no intention of pregnancy in the next year, and not using any FP method.	Northern, Central and Southern Zones of Kaduna, Nigeria	Rural and Urban	2016	NVivo
Sundararajan, *et al.* (2019)	Tanzania	Muslim; Protestant	Modern Contraceptives	Focus Group Discussions	206	18<	Males and Females	Villages that had both a Church and a Mosque.	Mwanza, NW Tanzania	Rural	2016-2017	NVivo

Appendix C1: Increasing Fertility (Ethiopia)

Table C1: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Ethiopia. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Davidson, *et al.* (2017)	***Religion** [Somalis]	Somalis' desire for large family sizes was influenced by the Islamic religion to have many children. Somalis felt that religious beliefs outweighed economic concerns as they believed Allah would provide them with protection.	*"Our Somali community wishes in having birth with many children. Our culture and our religion both are encouraging in having birth of more children."* ***Somali (gender unspecified)*** *"Our religion and culture allows in having lot of children, and we do not worry about economy because Allah guarantee all the economic aspects whatsoever, therefore, I interest in having many children."* ***Somali Male***
	Child Mortality / Financial Security / Social Security [Somalis]	Somalis saw having many children as necessary due to the possibility of a child dying, as well being a source of financial and social support in the future.	*"I personally interest to birth a lot of children…if someone interest in having 1 to 2 children, he does not know their children's live endurance, as well as his live endurance but only Allah knows it. Having a lot of children is helpful in many different aspects. For example, when the parent become old they support their parents and among themselves they will bring up their younger brothers and sisters and they also provide support to the society at large."* ***Somali Male***
	Fertility Desires [Somalis]	Both Eritreans and Somalis desired high family size, however, Somalis desired larger family sizes of 15 to 20 children, despite their refugee status.	*"I like to have 15, up to 20."* ***Somali Male*** *"I do not agree using contraception methods, because I need to have a lot of children."* ***Somali Male***
Mjaaland (2014)	Financial Security	When children are more educated and economic situation improves, fertility would increase again (causality - when economic considerations are central to their reasoning).	*(None presented.)*

Appendix C2: Increasing Fertility (Kenya)

Table C2: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Kenya. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Abdi, *et al.* (2020)	***Religion**	Most respondents from Wajir County referred to the Quranic recommendation that mothers breastfeed their children for 2 years to restore their physical and psychological health before continuing with another pregnancy, up until menopause.	*"In our religion in the Quran we were told for the woman who gives birth she should breast feed her child for 2 years so that both the mother and the baby's health will not be affected but if what you are talking about is child spacing more than those two years unless it is for medical reason then the religion does not allow, even ALLAH says in his book give birth and do not think about poverty because he is the provider."* ***FGD, Religious Leader, Wajir*** *"In our community we want our wives to give birth until the menopause stage that is what I want personally… My reason is am following the practice of the prophet and the prophet said I want my followers to reproduce and fill the earth."* ***FGD, Male, Wajir***
	Child Mortality	Families in both Lamu and Wajir Counties had larger families to take into account that some children may die in their childhood.	*"We prefer many children so that when some die at least you will still have some. For example, when you have only one or two and God takes them what will you do? So it's wise you bear as many children as you can."* ***FGD, Female, Lamu*** *"Many people have that perception that I rather have many children so that when some die, still you have other children."* ***IDI, Female Leader, Wajir***
	Fertility Desires *(preference for large family size)*	Men from Wajir County desired up to 15 children as children provide wealth and labour force.	*"In our community we want our wives to give birth until the menopause stage that is what I want personally. If you ask a number, I can tell you personally I need many children, around 15, because nobody wants few number when it comes to children."* ***FGD, Male, Wajir***
	Gender Preference	Having a boy was culturally preferred, more so in Wajir County than in Lamu County, therefore women would keep giving birth until they get a boy (or reach menopause).	*"…the other one is cultural bias towards the male… you will see a mother has 4 girls she sees this is a good number but her wanting to get a boy child, she will keep trying to get pregnant until she is able to get a boy or until menopause."* ***IDI, Health Worker, Wajir*** *"The society values boys more than girls, so if you don't have a boy you keep giving birth until you are able to get [one]."* ***FGD, Female, Wajir***
	Polygyny	Polygyny fuelled competition between co-wives. The more children each co-wife had, the more financial support they would inherit. This was reported more by	*"In polygamous marriage when a woman is married to a rich man many children will help her to inherit more wealth."* ***IDI, Female Leader, Wajir***

Study	Theme	Summary	Representative Quote(s)
		respondents in Wajir County than in Lamu County.	
Jensen (2017)	Age at First Marriage [Coast Villages]	Relatively lower fertility was likely due to women marrying later and therefore being exposed less to pregnancy.	*(None presented.)*
	Gender Attitudes [Western Villages]	In a highly polygynous and patriarchal society, risky behaviour such as drinking and prostitution led to risky sexual behaviour which led to higher fertility.	*(None presented.)*
	Gender Preference [Western Villages]	Boys were preferred, therefore women continued to have many children until they got a son.	*"In Bukusu (Kenya)… a woman… must at least give birth to a son, otherwise you are useless as a person in the family. Children are men's possessions: Children belong to the man… because he is the one who planted the seed."* ***FGD, Western Villages, Young Female (18–35 Years)***
	Marital Security / Social Status [Coast and Western Villages]	Overall, having many children provides security for women and prestige for men in both provinces, but on varying levels.	*(None presented.)*
	Medical Improvements [Coast Villages]	In the past, untreated reproductive health problems (venereal diseases and Muslim cultural practices) resulted in a sub-fertility belt stretching across central Africa which left Muslims with lower fertility than Christians. The Digo women in this study had fewer children in their desires. Women now have access to medical treatments for STIs, and are now able to achieve their fertility desires, which explains the slight increase in fertility.	*(None presented.)*
	Polygyny [Coast Villages]	The power of polygyny is moderate as women have higher autonomy and the option to leave their husbands.	*"Just leave the man to live his life and I live mine."* ***Young Female, Early 20s, Mother of Two*** *(In response to what she would do if her husband took another wife.)*
	Polygyny [Western Villages]	Women have many children to prevent husbands from taking on additional wives.	*(None presented.)*

Study	Theme	Summary	Representative Quote(s)
	Social Status *(Men)* [Western Villages]	Having many children enhances a man's prestige, ensures his property and is a sign of wealth.	*(None presented.)*
	Social Status *(Women)* [Western Villages]	A woman's status depends on the number of children she bears as "a prolific wife will command more respect from her husband and his kinsmen" (Wagner, 1949).	*"I only have one child, who happens to be a girl. People do not value girls as much as boys. So I feel that I am much inferior if I do not have children just like my co-wife who has eight children. Thus many people look down upon me just because I do not have many children."* ***IDI, Female, Early 30s, Western Villages, Has High Status in Terms of Education and Income, Second Wife of a Man of Rank***

Appendix C3: Increasing Fertility (Malawi)

Table C3:. Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Malawi. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Kok, *et al.* (2020)	Polygyny *(more attention with more children)*	Women who have many children get more attention from husbands when competing with co-wives. This was reported by participants in Katuli and Makanjira where the culture is predominantly Yao, which is predominantly Muslim and practice polygyny.	*"Give their husbands more children."* ***Married Female***
	Social Status	Culturally, having many children brings men high esteem among their peers.	*(None presented.)*

Appendix C4: Increasing Fertility (Nigeria)

Table C4: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Nigeria. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Adefalu, *et al.* (2019)	***Religion**	In Islam it is forbidden to stop having children.	*"In Islam, they say it is forbidden for a woman to stop herself from getting pregnant or people from getting more children. So, that is how they see it."* ***FP Coordinator, Sokoto North LGA***
			"Islam said woman should not be stopped from getting pregnant and deliver babies which our religion focuses on." ***Community Representative, Sokoto North LGA***
	Age at First Marriage	Women who married at a younger age were more likely to have more children.	*"Many women get married at young age when they are in their mid-twenties above and they already have about six especially when they need male children. When they have many already, they go to the facility for contraceptives."* ***Community Representative, Sokoto South LGA***
	Gender Preference	Having boys offers a sense of security in their husband's house, therefore women will continue to give birth until they get a boy.	*(As above.)*
Akinyemi, *et al.* (2020)	***Religion**	Community members believed that children are a *"divine blessing"* from God and families should have as many children as possible.	*"…there will always be resistance to this use of contraceptives, because here, we are people that believe that children are a blessing, so you give birth to as many as possible. …The resistance may not be as a group, but when you come to individual levels… as a government, they might not show you the resistance, but when it comes to the actual usage, that's where you start having problems."* ***IDI, Male Doctor, SMoH***
Izugbara, & Ezeh (2010)	***Religion** *(having children is a way to worship God)*	Children are a gift from God so having several children is a way to worship God and secure the future of Islam. Those serving one's fertility to Allah and helping the religion of Islam are considered good Muslims.	*(None presented.)*
	Age at First Marriage	Early marriage led to many children. One respondent stated that she was only 12 when she got married, and by the time she was 20, she had had 6 pregnancies. Men preferred to take young girls and virgins as	*(None presented.)*

Study	Theme	Summary	Representative Quote(s)
		wives for reason related to power, prestige and status.	
	Child Mortality	Having a high number of children was a strategy to take into account if a child dies during childhood.	*(None presented.)*
	Contraceptive Use *(covert use)*	Many women used contraceptives secretly from their husbands which made adhering to the products' correct usage difficult, resulting in risk of pregnancy. Covert use was to prevent husbands from taking on more wives if he was to find out about his wife's limited childbearing.	*"It is not easy for women here to use contraceptives with their husbands' knowledge. If men know..., you cannot tell what they will do. They can tell you to go ahead and then marry another wife. So, many of us use them secretly..., with poor results."* ***Female*** *"Many us do not want our husbands to know that we are using contraceptives ... so we are extremely careful. Sometimes you have to hide whatever you are using, and doing this makes it difficult to use them as prescribed."* ***Female***
	Contraceptive Use / Misconceptions	Respondents believed that modern contraceptives would cause "mahaifan kulle" (locked womb) and halt childbearing. Respondents also believed that modern methods were laced with substances that could cause cancer, loss of fertility, birth defects and STIs. These misconceptions are enforced by political and religious campaigns against modern methods. Many respondents resorted to traditional methods, despite knowing that they are less effective than modern methods. These traditional methods involved concoctions, amulets or charms. The calendar method was also used, though women found excuses to not have sex with their husbands on ovulating days, such as pretending to be ill or picking a quarrel.	*Contraceptives "gradually eat up women's fertility."* ***Female Participants in Jigawa and Kano*** *"Even when we don't want to have more children and we make efforts to prevent [pregnancy] by going for traditional family planning, it usually fails and we continue to have many children. Many fear using modern methods because of the things we hear about them: ...that they are not good."* ***Kairo, 38 Years Old, Housewife, Jigawa***
	Financial Security	Having many children provides financial security and labour for the future, and security and care for parents in their old age.	*(None presented.)*

Study	Theme	Summary	Representative Quote(s)
	Polygyny *(to receive more wealth)*	In polygynous marriages, women with more children get a higher share of the husband's daily earnings as well as inheritance at death (Islamic inheritance system). Even when there is not much to be inherited, husbands do not ask their wives to stop giving birth and competing (perhaps due to their elevated social status and power from having many children).	*"Here, husbands give things to their wives based on the number of children [the wives] have… To get more of your husband's wealth, you have to give birth to many children."* ***Nasirat, Female, 34 Years Old*** *"Men here, when they have some money, continue to marry, and when the women begin to compete to have more children, the men do not say anything, even when they know there isn't much to be inherited."* ***Female*** *"Men always say we need children to inherit from us. When wives hear it, they begin to compete to see who will have more children, especially when the man has some wealth."* ***Female*** *"If you go there (to my sister's house, aged 40), you won't believe it. When one wife gets pregnant, the others follow immediately; they don't want to be left behind."* ***Female*** *"Often cowives do not want their mates to have more children than they do. You either match them or outpace them. So they often continue to give birth until the whole place is full of children... If you don't compete, you get less from maigida [the husband]. He will give your mates 10,000 naira because they have many children and give you 3,000 naira or less because you have three children. The problem is there because husbands do not often ask their wives to stop when they notice this happening."* ***Safinatu, Mother of Seven, Second Wife (of Four)***
	Polygyny *(to prevent husbands from taking on more wives)*	Women give birth to more children to prevent husbands from taking on more wives. More children mean more responsibility for the husband.	*"Women here, when they want to prevent their husbands from marrying more wives will continue to give birth. By the time the house is full of children, the man will not want to bring in another wife."* ***Asana, 27 Years Old, Housewife, Kano*** *"I know men here… If you want to stop them from getting new wives, give them more responsibilities, and don't talk about family planning. Big responsibility is the key thing that prevents them from marrying so many women. When they remember that the responsibility for these children will be theirs alone... they rethink."* ***Hafsat, 42 Years Old, Mother of Eight, Kano*** *"If we had four children each, it would be easy for him to take a third or even a fourth wife. He could even decide to throw one of us out of his house and then redistribute her children among the other wives, but now it is difficult for him to do this."* ***Maimuna, Female, Jigawa*** *(Conspired with her co-wife to each become pregnant in alternate years*

Study	Theme	Summary	Representative Quote(s)
			to prevent their husband from taking on a third wife. They each have 7 children as of this study.)
	Polygyny *(threat of divorce)*	A strategy to deal with the threat of divorce is to have many children, especially when Muslim men have reached their allowed limit of having 4 wives. In northern Nigeria, divorced women do not leave with their children, but rather, they are left with the husbands. Therefore, having many children will put husbands off from divorce.	*"A wife with many children is not easily divorced."* ***FGD Female Participants in Jigawa and Kano***
			"One way to prevent a man from divorcing you is to bear him many children." ***FGD Female Participants in Jigawa and Kano***
			"A wife can prevent divorce by bearing her husband many children." ***FGD Female Participants in Jigawa and Kano***
			"I heeded this advice, and in five years I had four children. It is difficult for him to ask me to go now because I will leave the children with him. He can't send another four children to his mother." ***Jamima, Female*** *(Husband was notorious for divorcing his wives over flimsy excuses and sent his 4 children to live with his mother.)*
	Social Security	Childless women can be vulnerable to mistreatment and disrespect, consequently leaving her unhappy. Having children is a form of social protection.	*"If you don't have children, people will not respect you."* ***Female, Jigawa***
			"Children bring you respect; a childless woman can be mistreated by her co-wives and even by her husband… That's why it is good to have many children, so that you are sure nobody will laugh at you." ***Female, Kano***
	Social Security *(survival of family names, heritages and lineages)*	High fertility guarantees the survival of family names, heritage and lineages. Childlessness is fatal for the family line.	*"Haifuwa maganin mutuwa." ["Only birth cures death."]* ***Female Participants in Jigawa and Kano***
	Social Security *(survival of ethnic groups, faiths and regions)*	High fertility sustains the strength and relevance of ethnic groups, faiths and regions, as well as promotes greater political influence and representation.	*"Without giving birth to many people, we will not have many people and many Muslims."* ***FGD, Female, Jigawa***
			"A large population is good...; it guarantees our people a strong place in Nigeria and helps the religion to flourish." ***Female, Kano***
	Social Status	Large families symbolise fame, influence, respect and wealth, and serve to expand men and women's social networks and potentially elevate families up the social hierarchy. Furthermore, some of the many children could marry into wealthy and	*"You don't really know, [but a] child may be married by an emir or may marry a governor's daughter and bring you honour and wealth."* ***Female, Urban Jigawa***

Study	Theme	Summary	Representative Quote(s)
		powerful households, bringing parents wealth and social standing.	
Sinai, *et al.* (2019)	***Religion**	Both Christian and Muslim participants believed that children are a gift from God and should not be declined.	*"We have to thank God who gives us the children and pray to Him to give us good health and strength to care for them."* ***Rose, 31 Years Old, Mother of Five, Only Wife, Christian***
			"It is God who gives it to you, and you cannot do anything about it." ***Zahra, 36 Years Old, Mother of Seven, Second Wife (of Three), Muslim***
	Child Mortality	Having a high number of children was a strategy to take into account if a child dies during childhood. This was viewed by most participants in the 20-29 age group only.	*(None presented.)*
	Contraceptive Use	Failure in a FP method resulted in high number of children. This was stronger among women in 30-49 age group than 20-29.	*(None presented.)*
	Financial Security	High number of children was viewed as future social and financial security.	*(None presented.)*
	Gender Preference	Boys were preferred, therefore women continued to have many children until they got a son.	*(None presented.)*
	Misconceptions	Some women believed that they wouldn't be able to conceive easily because their eggs are far.	*"There are some people that say that their egg is far, and they can reach four to five years before they conceive. So, some people are comfortable with it because it is suiting their births and the spacing between their children."* ***Felicia, 28 Years Old, Mother of One, Only Wife, Christian***
	Misconceptions	Some women believed that they must have as many children as they have eggs, and that they must finish their eggs.	*"Some women think that if they do not give birth to all their eggs, it can lead to diseases or make her to become sick, so they try as much as possible to see that they deliver all the eggs."* ***Favour, 29 Years Old, Mother of One, Only Wife, Christian***
	Misconceptions	Some women believed that only pre-ejaculate liquids could make them pregnant.	*"Yes, the male sperm that comes at the beginning of the intercourse is what makes women pregnant not the one that comes at the end of long intercourse that only makes the couples feel the pleasure of having sex."* ***Huseina, 30 Years Old, Mother of Three, Third Wife (of Three), Muslim***
	Polygyny (*share of inheritance)*	When co-wives are involved, having many children increases the share of inheritance from the husband.	*(None presented.)*

Study	Theme	Summary	Representative Quote(s)
	Polygyny *(more attention with more children)*	Many women perceived men to view women more beautifully and love them more if they had more children, especially if competition between co-wives is involved. This view was stronger among women in 30-49 age group than 20-29.	*(None presented.)*
	Social Expectations	Women felt pressure from relatives and in-laws to have a greater number of children.	*(None presented.)*
	Social Status	Limiting the number of children causes men to appear weak and submissive to their wives.	*(None presented.)*

Appendix C5: Increasing Fertility (Somalia)

Table C5: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Somalia. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	**Theme**	**Summary**	**Representative Quote(s)**
Egeh, *et al.* (2019)	***Religion**	The Islamic religion encourages giving birth to as many children as possible. Limiting the number of children is considered a sin.	*"Using birth control is not only forbidden but is considered a deadly sin and a violation of Islamic law."* ***Religious Leader***

Appendix C6: Increasing Fertility (Tanzania)

Table C6: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Tanzania. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Aristide, *et al.* (2020)	***Religion**	Church-goers believed that being provided with eggs was God's plan and that they should multiply as much as they can. Some respondents were unsure whether their faith allowed to control the number of children they give birth to.	*"I don't know if the Bible says it but as I recognise even God said he allows us to go and multiply. I don't know if there is another passage which says you should give birth according to [FP]."* ***Female, Church Attender*** *"There is no using FP because I want [to give birth] until the eggs that God planned [have been used up]."* ***Female, Church Attender***
	Marital Security	Respondents believed that it was a wife's duty to bear many children.	*"If you stop giving birth, your [marriage] is over."* ***Female, Church Attender***
Msoka, *et al.* (2019)	Husband's Age / No. of Living Children / Polygyny	Men are unwilling to limit the number of children they have until they reach a certain age and have a certain number of children (between multiple wives).	*"Vasectomy can be done after a man is above 45 years and has six or more children. He will be willing to practice vasectomy because the number of children is so big."* ***FGD 3, R 5, Kisarawe***
	Social Status	The more children a man had, the more respected he was in the community. Men with many children were viewed as powerful, proud and rich. Children were seen as assets for future wealth and labour.	*(None presented.)*
Pallangyo, *et al.* (2020)	***Religion**	Some women said limiting births (by vasectomy) was against "God's plan". This was particularly relevant in rural settings.	*"Why are you correcting God who planned for the birth? You are contrary to His wish, you are against good values of the religion... In town, you will be seen as a cunning person, but for people like us from rural areas it is an issue."* ***Woman 1, Kisarawe***
	Social Status	Men with many children were regarded as powerful, proud and respected in the community. Those who practice contraception are seen as weak and submissive to women.	*(None presented.)*
Sundararajan, *et al.* (2019)	***Religion** *(against limiting number of children)*	Direct statements regarding fertility within religious scriptural texts were vague and lacking, leading to varied and ambiguous interpretations on religious	*"In our religion, we are forbidden to use family planning, because we are told to go and multiply, and fill the land."* ***Female, Christian***

		stances on the number of children acceptable. A number of Christian and Muslim respondents viewed limiting the number of children as opposed to their religious beliefs, that their religion states that they should multiply and fill the land.	*"The Quran does not allow us because the prophet he says he will be proud on that day when he stands to see the multitude of people is big."* ***Male, Muslim***

Appendix C7: Increasing Fertility (Uganda)

Table C7: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing increasing fertility in Uganda. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Kabagenyi, *et al.* (2016)	***Religion / Religiosity**	Male and female respondents mentioned that children are a gift from God and that all children come with a blessing. Respondents believed that they have to produce until all eggs are finished and that God will provide for all children.	*"When it comes to religion, for example, the Muslims have to produce until the eggs are finished in the womb. However not only the Muslims, the Bible says go produce and fill the world. Muslims also have a belief that every child comes with his or her blessing."* ***Male, IDI, Mpigi***
	Attitudes	There is a belief that when there is a twin birth, it should be followed by another birth and that it is abominable to stop at twins.	*"For me what I hear people saying is that "Nalongo or Salongo" parents of twins do not stop giving birth at twins. There should be a follower to the twins called "KIIZA", therefore if someone bears twins, they have to get another child to follow the twins."* ***Female, FGD, 25-34 Years, Mpigi***
	Gender Attitudes / Domestic Violence	Some women fear domestic violence and being chased away if they don't produce many children. Men are perceived as the decision-makers and decide how many children they want; women are perceived to grant the number of children a man wants and does not have any say in the matter.	*"Men are difficult and always say they are the decision makers. For instance, I had twins with my husband, however when I conceived again, they (health workers) called my husband to talk to him because I had complications. They (health workers) wanted me to stop giving birth but my husband did not want."* ***Female, IDI, Bugiri***
	Gender Attitudes / Social Expectations	Married women are expected to give birth to as many children as possible. If a woman does meet the marital expectations, she can be chased away from	*"…in our society every married woman is expected to have as many children as possible. Those who cannot bear children are given undesirable names. Occasionally, some married women with few or no children are threatened by their partners to retrieve bride price from their families."* ***Female, IDI, Bugiri***

Study	Theme	Summary	Representative Quote(s)
		her marital home. Price bride is also given with a hope that women would bear as many children as possible. Furthermore, women are expected to obey their husbands. They perceive men as wanting many children and therefore, by producing many offspring is a sign of respect and love for the husband.	
	Gender Preference / Social Security / Social Status	Most male participants believed that women should produce many children to extend their lineage. Sons were preferred as this was a symbol of social status for the son would continue the family lineage so women would continue having children until a son was achieved. A lot of value is also attached to children. Lastly, births also meant replacement of ancestors, and continuity of clan's existence and cultural values.	*(None presented.)*
	Polygyny	When competing with co-wives, more children means a higher share of wealth. Having more children is also seen as getting more attention from the husband.	*"Most women in polygamous relationships are competing with their co-wives to have more children born. Competition comes in when the man is well off, has some money, domestic animals and land so when one produces few, her children would be cheated while sharing the fathers' inheritance."* ***Male, FGD, 35-54 Years, Bugiri***

Appendix D1: Limiting Fertility (Ethiopia)

Table D1: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing limiting fertility in Ethiopia. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Davidson, *et al.* (2017)	Access to Education / Quality of Life [Eritreans]	Having fewer children can allow for education and better quality of life. The following quote may also imply that having fewer children is also beneficial for the environment, and that by benefitting the environment, quality of life is also benefitted.	*"…The world is getting more developed; the soil is not as in the past. It is being polluted. So that you cannot have children as in the past. You have to see in quality not quantity. Being educated and healthy, he can benefit the community and can be a citizen that can benefit his country."* ***Eritrean Male***
	Fertility Desires [Eritreans]	Both Eritreans and Somalis desired high family size, however, Eritreans preferred to limit their family size to 3 to 5 children due to economic constraints and their refugee status.	*"I say generally it should not exceed from three."* ***Eritrean Female*** *"My husband and I do not want to have child here, since we are migrants we do not want any more."* ***Eritrean Female***
	Financial Constraints / Refugee Status [Eritreans]	Eritreans preferred to limit their family size due to economic constraints and their refugee status.	*"You have to get children with plan since we are in migration; economy can restrict you. If you get more children you can be pressured due to the poverty."* ***Eritrean Male***
Mjaaland (2014)	Financial Constraints	Participants from rural and suburban areas stated that if they could not afford children, then they should not have any. Limiting fertility helped with escaping poverty and hunger, improved living conditions, improved their and their children's health, and be able to provide all their children (rather than just their cleverest boys) with an education.	*"We want to give our children a good upbringing. If they are too many how can we manage?"* ***Female, 30 Years Old, Non-Literate, Peasant*** *"Since we were rich [then], there was no reason to reduce the births."* ***Female, 58 Years Old, Non-Literate, Peasant***

Appendix D2: Limiting Fertility (Kenya)

Table D2: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing limiting fertility in Kenya. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Abdi, *et al.* (2020)	Fertility Desires *(preference for modest family size)*	Both men and women from Lamu County and Women from Wajir County desired modest family sizes of 4-6 children due to the economic burden of sustaining large families.	*"I would say four is enough. Many women in this current time, they are employed women and the economy doesn't favour one having many children. Some say they want four, others even seven children, but most prefer four because it is manageable."* ***IDI, Female Leader, Lamu***
Jensen (2017)	Contraceptive Use [Coast + Western Villages]	Widespread access to modern contraceptives decreased fertility in Western Villages and kept it low and stable in Coast Villages.	*(None presented.)*
	Financial Constraints [Western Villages]	Western Villages are more agricultural therefore needing more children. But fertility fall of the Western Villages could be the result of weak economic development.	*(None presented.)*
	Gender Attitudes [Coast Villages]	Father's involvement in their children likely influences keeping fertility relatively low and stable.	*(None presented.)*
	Gender Attitudes [Coast and Western Villages]	Discontent in gender roles and signs of change in attitudes may play a part in fertility trends changing in Western Villages, and maintaining relatively low in Coast Villages.	*(None presented.)*
	Gender Preference [Coast Villages]	There appears to be no preference for boys or girls, therefore keeping fertility relatively low and stable.	*"All kids are equal… sex doesn't matter, a kid is a kid."* ***FGD, Coast Villages, Young Males (18–35 Years)*** *"I regard all children as equal. We cannot ignore their rights."* ***IDI, Coast Villages, Young Female***

Appendix D3: Limiting Fertility (Malawi)

Table D3: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing limiting fertility in Malawi. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	**Theme**	**Summary**	**Representative Quote(s)**
Kok, *et al*. (2020)	Financial Constraints	Having many children is costly and keeps the woman stuck in poverty.	*"A woman who doesn't follow family planning is always busy with children at home and poverty is always on her because of the many children. You also appear attractive to your husband when you practice family planning because you don't get old quickly."* ***FGD, Married Females 19+ Years, Makanjira***
	Polygyny *(more attention with less children)*	Contrary to the above, some women from the same areas stated that having fewer children helped them remain attractive to their husbands thereby avoiding them taking on a younger second wife.	*(As above.)*
	Time Consuming	Having many children is time consuming and eliminate women of their free time.	*(As above.)*

Appendix D4: Limiting Fertility (Nigeria)

Table D4: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing limiting fertility in Nigeria. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Izugbara & Ezeh (2010)	***Religion** *(God and people both control fertility)*	Respondents believed that both God and the people had the power to control fertility.	*"Allah (God) gives and controls fertility, but people can also do something about it."* ***FGD Female Participants in Kano*** *"Allah gives us fertility, but people can also affect it... We can try and fail, but Allah does not fail."* ***Female, Kano*** *"It is only Allah that makes people fertile and gives children, but people can also decide to have a particular number."* ***Amina, 40 Years Old, Jigawa***
	Fertility Desires	Most women desired 5 children or fewer, however, most women had far more than their desired number, exceeding 6 children. Those who had not yet achieved	*"I decided then that if I ever married, I wouldn't want more than five or six children." However, her husband, married a second and third wife, and left them to compete among themselves concerning the number of children to have.* ***Halima, 47 Years Old, Mother of Eight***

		their fertility desires predicted that they would likely overshoot their desired mark as a results of co-wife competition.	
	Financial Constraints	Despite the influences of wanting to have many children, most respondents did not support unregulated childbearing. Having too many children can be costly and lead to poverty, which reduces the quality of life and opportunities available for the children.	*"Having a house full of children can bring you wealth, good luck, and happiness, but it can also be difficult. You need to train them and cater for them, and if you are poor, this is not easy."* ***35 Years Old, Mother of Four***
	Maternal Health	Most respondents acknowledged that limiting fertility would be beneficial towards their health, and avoid illness and suffering.	*(None presented.)*

Appendix D5: Limiting Fertility (Tanzania)

Table D5: Results from the qualitative studies (2010-2019 + 2020) displaying the summaries and representative quotes of themes influencing limiting fertility in Tanzania. "For papers not given in References above, Turner 2021 (https://thesiscommons.org/sezdq) contains the full reference"

Study	Theme	Summary	Representative Quote(s)
Msoka, *et al.* (2019)	Financial Security	Some women raised concerns that having fewer children would be easier financially.	*(None presented.)*
Pallangyo, *et al.* (2020)	Access to Education / Financial Constraints / Quality of Life	Some women commented that a large number of children results in poor living standards and quality of life, and that having too many children meant that families couldn't pay school fees, leaving children uneducated as a consequence and not improving living conditions in the future.	*(None presented.)*
	Access to Education / Quality of Life	Educated men desired smaller family sizes so that they can provide a better quality family life.	*"Some people will see [a man] as breaching customs (if he uses vasectomy), but those who are ahead of us those who are well educated see him as a clever person. Educated people give birth to two, three, or four children, but for us who did not go to school, we go for eight children or ten. You're competing: my neighbour has six kids so I also need six kids."* ***Female 1, Chalinze***

Sundararajan, *et al.* (2019)	***Religion** *(for limiting number of children)*	Contrary to the above, some respondents believed that limiting the number of children was acceptable by citing moral lessons derived from religious texts, such as caring for children and living within one's means.	*"When God says that you should fill the earth, he did not mean we should just give birth, that we should just give birth haphazardly. He meant that you give birth to those children you should be able to feed them with your income… You should give birth to the children that you can take care of in your life… If you do not take care of them, you just leave them? That is also a sin."* ***Female, Christian*** *"God has started this question. He has seen it–yes indeed –because he said first when you want to marry, you marry in accordance with your position. God has admonished us, first even if you want to marry, marry the women you are able to keep. But, you must fulfil their needs. There we came to look, and in this question of children, the religion is also involved to tell us we should give birth in relation to our capacity. It has admonished us we should give birth in accordance to our economic capacity, the way we are. Yes, indeed that is how religion tries to be involved."* ***Male, Muslim***
	Financial Constraints	Large family sizes cause stresses on men as breadwinners of the family. This was reported among both Christian and Muslim men.	*"What causes us men to agree to be advised early to practice family planning is mainly due to the economic situation. If you look at it right now, the economy is already very bad. Men agree easily to family planning because of the life, and low life, you see. I have to reduce the poverty because I am the one to look out for everything, therefore I must be involved so that I bring up few children."* ***Male, Christian*** *"It comes like this; you get a family. At times it is too much for you… to give it the important needs. For example, education, a place to sleep, and the needs of food."* ***Male, Muslim***
	Maternal Health	Having fewer children leads to lower risk of maternal mortality.	*"Another reason which women… follow family planning is the deaths of mother and child… if you look a high percentage of families who do not follow family planning, the mother gets negative effects. First there is exhaustion, exhaustion brings deaths. The mother gives birth one year, she gives birth to a child one year, she hasn't rested those cells…. She has a child. The following year she has a child. It means it leads even to death."* ***Male, Christian***
	Quality of Life	Having fewer children allows more attention and better quality to be given to each child. This was generally agreed upon regardless of gender or religion.	*"We give them a chance of being… [A young child] still needs the mother's love and you give birth to another child, that means you desert the previous one and you don't give him/her the same rights equal to the ones of the small child. [By using family planning] we are having ample time to take care of the children we already have with more love and bringing them up better."* ***Female, Muslim***
	Quality of Life *(Hygiene)*	Having fewer children results in better hygiene. Husbands also want clean living conditions otherwise they may look for additional wives that are cleaner.	*"Now the man sees the children reach even three, four inside. Now I, the woman, will be unable even to wash clothes, to sweep the house. When he comes in he finds it just dirty. Now it is necessary that he finds a [girlfriend outside of the marriage] because…he'll find that woman is clean. Maybe she has children, she has only one child. He'll find the lady there is clean. She washes the clothes. But if he comes to you with five or six children, it just smells of urine inside, so he just has to run away and leave you with this family."* ***Female, Christian***

Appendix E: Distribution of Population by Denomination Across Sub-Saharan Africa

Table E. Percentage of population composition by religious denomination in Sub-Saharan African countries. [Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects 2019: Highlights. (United Nations, 2020)] [NB: No data was available for Equatorial Guinea, Eritrea, Madagascar, Sudan and South Sudan.]

Country	Sub-Region (UN Definition)	Muslim (%)	Catholic (%)	Protestant (%)	Other Christian (%)	Total Christian (%)	African Indigenous Religions (%)	Other / Unspecified Religions (%)	No Religious Affiliation (%)	Source Year
Angola	Central Africa		41.1%	38.1%		79.2%		8.6%	12.3%	2014
Benin	Western Africa	27.7%	25.5%	13.5%	9.5%	48.5%	14.2%	2.6%	5.8%	2013
Botswana	Southern Africa					79.1%	4.1%	1.7%	15.2%	2011
Burkina Faso	Western Africa	61.5%	23.3%	6.5%		29.8%	7.8%	0.2%	0.7%	2010
Burundi	Eastern Africa	2.5%	62.1%	23.9%		86.0%		11.5%		2008
Cameroon	Central Africa	24.4%	38.3%	25.5%	6.9%	70.7%	2.2%	0.5%	2.2%	2018
CAR	Central Africa	8.5%				89.5%	1.0%		1.0%	2010
Chad	Central Africa	52.1%	20.0%	23.9%	0.2%	44.1%	0.3%	0.7%	2.8%	2014/15
Congo	Central Africa	1.6%	33.1%	22.1%	23.8%	79.0%		8.1%	11.3%	2010
Côte d'Ivoire	Western Africa	42.9%	17.2%	13.5%	3.2%	33.9%	3.6%	0.5%	19.1%	2014
Djibouti	Eastern Africa	94.0%				6.0%				
DR Congo	Central Africa	1.3%	29.9%	26.7%	39.3%	95.9%		1.4%	1.3%	2014
Eswatini	Southern Africa	2.0%	20.0%	40.0%	30.0%	90.0%		8.0%		2015
Ethiopia	Eastern Africa	31.3%	0.7%	22.8%	43.8%	67.3%	0.6%	0.8%		2016
Gabon	Central Africa	9.8%	42.3%	12.3%	27.4%	82.0%	0.6%	7.6%		2012
Gambia	Western Africa	95.7%				4.2%		0.1%		2013
Ghana	Western Africa	17.6%	13.1%	46.7%	11.4%	71.2%	5.2%	0.8%	5.2%	2010
Guinea	Western Africa	89.1%				6.8%	1.6%	0.1%	2.4%	2014
Guinea-Bissau	Western Africa	45.1%				22.1%	14.9%	15.9%	2.0%	2008
Kenya	Eastern Africa	10.9%	20.6%	53.8%	11.1%	85.5%		2.0%	1.6%	2019
Lesotho	Southern Africa		39.3%	47.8%	9.1%	96.2%		1.4%	2.3%	2014
Liberia	Western Africa	12.2%				85.6%	0.6%	0.2%	1.5%	2008
Malawi	Eastern Africa	13.8%	17.2%	33.5%	26.6%	77.3%	1.1%	5.6%	2.1%	2018
Mali	Western Africa	93.9%				2.8%	0.7%		2.5%	2018
Mauritania	Western Africa	100.0%								
Mozambique	Eastern Africa	18.9%	27.2%	32.6%		59.8%		7.3%	13.9%	2017

Country	Sub-Region (UN Definition)	Muslim (%)	Catholic (%)	Protestant (%)	Other Christian (%)	Total Christian (%)	African Indigenous Religions (%)	Other / Unspecified Religions (%)	No Religious Affiliation (%)	Source Year
Namibia	Southern Africa					85.0%	15.0%			
Niger	Western Africa	99.3%				0.3%	0.2%		0.1%	2012
Nigeria	Western Africa	53.5%	10.6%		35.3%	45.9%	0.6%			2018
Rwanda	Eastern Africa	2.0%	43.7%	49.5%		93.2%		2.2%	2.5%	2012
Senegal	Western Africa	95.9%				4.1%				2016
Sierra Leone	Western Africa	78.6%				20.8%		0.5%		2013
Somalia	Eastern Africa	100.0%								2012
South Africa	Southern Africa	1.9%				86.0%	5.4%	1.5%	5.2%	2015
Tanzania	Eastern Africa	35.2%				61.4%	1.8%	0.2%	1.4%	2010
Togo	Western Africa	14.0%				43.7%	35.6%	0.5%	6.2%	2010
Uganda	Eastern Africa	13.7%	39.3%	45.1%		84.4%		1.6%	0.2%	2014
Zambia	Eastern Africa		20.2%	75.3%		95.5%		2.7%	1.8%	2010
Zimbabwe	Eastern Africa	0.5%	7.3%	74.8%	5.3%	87.4%	1.5%	0.1%	10.5%	2015

Appendix F: Statistical Data for Countries in Sub-Saharan Africa

Table F: Statistical data for Sub-Saharan African nations. [Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects 2019: Highlights. (United Nations, 2020)]

Country	Sub-Region (UN Definition)	Population (2020)	Yearly Change (%)	Population Density per km² (2021)	Land Area (km²)	TFR (2020)	CPR (%)	CPR Source Year	Median Age	Urban Population (%) (2020)	GDP per Capita (US$) (2019)
Angola	Central Africa	32,866,272	3.27%	26	1,246,700	5.96	13.7%	2015/16	17	67%	2,791
Benin	Western Africa	12,123,200	2.73%	108	112,760	5.53	15.5%	2017/18	19	48%	1,219
Botswana	Southern Africa	2,351,627	2.08%	4	566,730	2.45	67.4%	2017	24	71%	7,961
Burkina Faso	Western Africa	20,903,273	2.86%	76	273,600	4.51	32.5%	2018/19	18	31%	787
Burundi	Eastern Africa	11,890,784	3.12%	463	25,680	5.28	28.5%	2016/17	17	14%	261

Country	Sub-Region (UN Definition)	Population (2020)	Yearly Change (%)	Population Density per km² (2021)	Land Area (km²)	TFR (2020)	CPR (%)	CPR Source Year	Median Age	Urban Population (%) (2020)	GDP per Capita (US$) (2019)
Cameroon	Central Africa	26,545,863	2.59%	56	472,710	4.66	19.3%	2018	19	58%	1,508
CAR	Central Africa	4,829,767	1.78%	8	622,980	4.14	15.2%	2010/11	18	42%	468
Chad	Central Africa	16,425,864	3.00%	13	1,259,200	5.68	5.7%	2014/15	17	24%	710
Congo	Central Africa	5,518,087	2.56%	16	341,500	4.45	30.1%	2014/15	19	68%	2,280
Côte d'Ivoire	Western Africa	26,378,274	2.57%	83	318,000	3.67	23.3%	2018	19	52%	2,276
Djibouti	Eastern Africa	988,000	1.48%	43	23,180	2.19	19.0%	2012	27	78%	3,415
DR Congo	Central Africa	89,561,403	3.19%	40	2,267,050	5.77	20.4%	2013/14	17	46%	581
Equatorial Guinea	Central Africa	1,402,985	3.47%	50	28,050	4.11	12.6%	2011	22	73%	8,132
Eritrea	Eastern Africa	3,546,421	1.41%	35	101,000	3.73	8.4%	2010	19	41%	643 *(2011)*
Eswatini	Southern Africa	1,160,164	1.05%	67	17,200	2.52	66.1%	2014	21	24%	3,895
Ethiopia	Eastern Africa	114,963,588	2.57%	115	1,000,000	4.14	40.1%	2018	19	22%	856
Gabon	Central Africa	2,225,734	2.45%	9	257,670	3.41	31.1%	2012	23	90%	7,767
Gambia	Western Africa	2,416,668	2.94%	239	10,120	3.21	16.8%	2018	18	63%	778
Ghana	Western Africa	31,072,940	2.15%	137	227,540	3.90	30.8%	2017	22	57%	2,202
Guinea	Western Africa	13,132,795	2.83%	53	245,720	4.92	10.9%	2018	18	37%	963
Guinea-Bissau	Western Africa	1,968,001	2.45%	70	28,120	4.75	16.0%	2014	19	44%	697
Kenya	Eastern Africa	53,771,296	2.28%	94	569,140	3.43	60.5%	2017	20	28%	1,817
Lesotho	Southern Africa	2,142,249	0.80%	71	30,360	2.50	64.9%	2018	24	29%	1,118
Liberia	Western Africa	5,057,681	2.44%	53	96,320	4.90	31.2%	2016	19	52%	622
Madagascar	Eastern Africa	27,691,018	2.68%	48	581,795	3.78	44.3%	2018	20	39%	523
Malawi	Eastern Africa	19,129,952	2.69%	203	94,280	5.31	59.2%	2015/16	18	17%	412
Mali	Western Africa	20,250,833	3.02%	17	1,220,190	5.72	17.2%	2018	16	44%	879

Country	Sub-Region (UN Definition)	Population (2020)	Yearly Change (%)	Population Density per km² (2021)	Land Area (km²)	TFR (2020)	CPR (%)	CPR Source Year	Median Age	Urban Population (%) (2020)	GDP per Capita (US$) (2019)
Mauritania	Western Africa	4,649,658	2.74%	5	1,030,700	3.65	17.8%	2015	20	55%	1,679
Mozambique	Eastern Africa	31,255,435	2.93%	40	786,380	4.97	27.1%	2015	18	37%	504
Namibia	Southern Africa	2,540,905	1.86%	3	823,290	3.07	56.1%	2013	22	52%	4,958
Niger	Western Africa	24,206,644	3.84%	19	1,266,700	7.00	11.0%	2017/18	15	17%	554
Nigeria	Western Africa	206,139,589	2.58%	226	910,770	4.72	16.6%	2018	18	52%	2,230
Rwanda	Eastern Africa	12,952,218	2.58%	525	24,670	3.52	53.2%	2014/15	20	17%	820
Senegal	Western Africa	16,743,927	2.75%	87	192,530	4.04	27.8%	2017	19	48%	1,447
Sierra Leone	Western Africa	7,976,983	2.10%	111	72,180	4.62	21.2%	2019	19	43%	528
Somalia	Eastern Africa	15,893,222	2.92%	25	627,340	5.51			17	46%	320
South Africa	Southern Africa	59,308,690	1.28%	49	1,213,090	2.22	54.6%	2016	28	67%	6,001
South Sudan	Eastern Africa	11,193,725	1.19%	18	610,952	5.54	4.0%	2010	19	20%	1,120 *(2015)*
Sudan	Eastern Africa	43,849,260	2.42%	25	1,765,048	4.72	12.2%	2014	20	35%	442
Tanzania	Eastern Africa	59,734,218	2.98%	67	885,800	4.59	38.4%	2015/16	18	35%	1,122
Togo	Western Africa	8,278,724	2.43%	152	54,390	4.22	23.9%	2017	19	43%	679
Uganda	Eastern Africa	45,741,007	3.32%	229	199,810	5.54	41.8%	2018	17	25%	794
Zambia	Eastern Africa	18,383,955	2.93%	25	743,390	5.49	49.5%	2018	18	45%	1,305
Zimbabwe	Eastern Africa	14,862,924	1.48%	38	386,850	3.93	66.8%	2015	19	32%	1,464