

RESEARCH ARTICLE

Determinants of the desire to limit childbearing among married women in sub-Saharan African countries

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Abstract

Most sub-Saharan African countries have experienced high total fertility rates, leading to rapid population growth and policy concerns. This study examined the determinants of the desire to limit childbearing among married women in four high-fertility sub-Saharan African countries using the most recent demographic and health survey data: Gabon (2019), Mali (2018), Tanzania (2022), and Zambia (2018). The analysis included married women desiring to limit childbearing, with sample sizes of 3,664 (Gabon), 6,782 (Mali), 6,946 (Tanzania), and 6,674 (Zambia). Multivariate binary logistic regression was performed, and the results were reported with 95% confidence intervals (CIs). Zambia recorded the highest proportion of married women desiring to limit childbearing (47%), whereas Mali had the lowest (23.9%). Older women (35 – 49 years) were more likely to express this desire than younger women (15 – 19 years) in Gabon (adjusted odds ratio [aOR] = 3.02; CI: 1.60 – 5.70), Mali (aOR = 44.28; CI: 26.19 – 74.89), Tanzania (aOR = 8.85; CI: 5.81 – 13.49), and Zambia (aOR = 6.74; CI: 4.61 – 9.86). Increasing parity was also a significant predictor. Women with one to two children had lower odds of wanting to limit childbearing compared to those with five or more children: (aOR = 0.05; CI: 0.03 – 0.08) in Gabon, (aOR = 0.10; CI: 0.06 – 0.15) in Mali, (aOR = 0.03; CI: 0.02 – 0.04) in Tanzania, and (aOR = 0.04; CI: 0.03 – 0.06) in Zambia. Across all countries, the age of a woman, parity, and decision-making were significant determinants of the desire to limit childbearing among married women. The study highlights the need to intensify reproductive health education and family planning services, particularly for younger women. In addition, empowering marginalized women can help them make informed reproductive choices, thus increasing their desire to limit childbearing.

Keywords: Women; Reproductive health; Fertility desire; Family planning; Sub-Saharan Africa

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1. Introduction

Sub-Saharan Africa (SSA) is a part of the world where total fertility has been constantly high for a long time. The region's population growth rate has been, for a long time,

higher than that of other regions of the world (Bongaarts, 2020). It is evident that population growth rates have significantly declined in developed regions due to a drastic fertility transition, which has reduced the total fertility rate to below the replacement level (Cheng *et al.*, 2022). The United Nations Population Fund (UNFPA) estimates showed that in 2024, the world population was eight billion people (UNFPA, 2024), in which SSA accounted for approximately 1.2 billion with an average total fertility rate of four children per woman (Tesfa *et al.*, 2023). SSA has the highest total fertility rate in the world, with a population growth 7 times higher than that of more developed regions (Tesfa *et al.*, 2023; UNFPA, 2022). This situation has led to a dramatic increase in the population of developing countries, primarily caused by an increase in the number of women reaching reproductive age and slow changes in fertility rates (UNFPA, 2022; UNPD, 2019).

Evidence shows that although fertility decline has begun in nearly all parts of SSA, the pace of decline has been slower than in other parts of the world (Bongaarts, 2016; Bongaarts & Casterline, 2013). Given the high levels of fertility in SSA, significant health policies and programming have been devoted to improving women's access to and use of modern contraceptives (Emeh *et al.*, 2023). These family planning initiatives are intended to enhance women's sexual and reproductive health rights to enable them to make informed reproductive decisions to space or limit childbearing, so that they can meet their desired reproductive goals (Ezeanolue *et al.*, 2015; Oranje *et al.*, 2011). Various initiatives aimed at promoting contraception use have been discussed at the continental level. One such example includes the 2006 Maputo Program of Action, signed by 48 African Union member countries. The plan called for enhancing universal access to reproductive health services among women by 2015 (African Union, 2006).

High fertility in SSA is largely attributed to cultural norms favoring large families, limited access to contraception, and lower levels of female education and employment opportunities (Mwaisaka *et al.*, 2020). Recent trends indicate that fertility decline has occurred in most SSA countries, although the fertility rates remain higher compared to other regions of the world. The average total fertility rate in East Africa dropped to 3.9 children per woman in 2023, whereas West Africa remains high at 5.1 children per woman (Tesfa *et al.*, 2023). National initiatives, such as expanded family planning programs in Kenya and Rwanda, have contributed to observed declines in East African countries. On the other hand, Southern Africa has the most advanced fertility transition, characterized by early childbearing peaks and negative

correlations between fertility levels and both age at first marriage and contraceptive prevalence (Ojakaa, 2022). Limiting childbirth is crucial for women and their families in SSA as it significantly enhances maternal and child health. Frequent pregnancies increase the risk of maternal mortality and complications such as anemia, pre-eclampsia, and obstetric fistula. By spacing births and limiting the number of children, women can recover fully between pregnancies, reducing health risks and leading to better overall well-being.

On a broader scale, reducing high fertility rates in SSA is vital for economic and social development. Lower fertility rates can contribute to a demographic dividend. Moreover, smaller family sizes enable households to save more and invest in their futures, enhancing overall economic stability (Ahinkorah *et al.*, 2021). For SSA countries, managing population growth is essential for sustainable development, as it helps reduce the strain on natural resources, public services, and infrastructure, paving the way for a more resilient and prosperous society (Bongaarts, 2009). Studies across SSA and elsewhere have identified various demographic factors, such as age, parity, ideal number of children, and socioeconomic factors, such as educational level, religious beliefs, current contraceptive use, and decision-making autonomy, as key drivers influencing women's desire to limit childbearing (Ahinkorah *et al.*, 2020; Bolarinwa *et al.*, 2022; Matovu *et al.*, 2017; Muluneh & Moyehodie, 2021).

The timing of key reproductive events, such as the age of first sexual activity and the age of first marriage, significantly influences a woman's fertility preferences and her eventual desire to limit childbearing. Studies indicate that women who engage in sexual activity at an early age are more likely to experience early marriage and prolonged reproductive spans, which increase their total fertility rates and delay their inclination to limit childbearing (Ahinkorah *et al.*, 2021; Kidie *et al.*, 2024). Early marriage is often associated with limited access to education and economic opportunities, reinforcing traditional gender roles and higher fertility expectations, particularly in SSA (Bongaarts, 2020; Namukoko *et al.*, 2022). Conversely, women who delay their first sexual activity and marriage tend to have better access to education, reproductive health services, and contraceptive methods, enabling them to make informed decisions regarding their fertility preferences (Adhikari, 2010; Muhoza, 2019). Understanding the interplay between these factors is essential for shaping policies that promote delayed marriage, comprehensive reproductive health education, and access to modern contraceptive methods to help women achieve their reproductive goals.

Most studies on fertility preference in SSA have focused on examining determinants of the desire for more children in countries such as Nigeria, Niger, Ghana, and Uganda (Babalola *et al.*, 2017; Mardi *et al.*, 2018; Naghibi *et al.*, 2019). Others have examined broader regions such as SSA and East Africa (Ahinkorah *et al.*, 2021; Casterline & El-Zeini, 2007; Cleland *et al.*, 2020). These studies are important because they provide useful information to understand the causes of high fertility in SSA. Despite this extensive research, there is also a need to understand the profiles and factors that are associated with the desire to limit childbearing among women of reproductive age, especially in high-fertility countries. This study examines fertility behavior in high-fertility countries in SSA (Gabon, Mali, Tanzania, and Zambia) using the most recent demographic and health survey data, offering a comparative perspective on regional reproductive behaviors. Unlike many studies focused on single countries, this study addresses the lack of research on factors influencing married women's desire to limit childbearing. Understanding these factors is essential for shaping effective reproductive health policies, improving access to family planning, and promoting gender equality. Beyond academic contributions, this research has key policy implications, emphasizing targeted interventions to support younger, less-educated women and enhance women's autonomy through economic empowerment.

1.1. Theoretical framework

The decision to limit childbearing can be analyzed through an expanded theoretical lens that integrates Easterlin's demand–supply framework of fertility, the Gender and Development (GAD) framework, and the Social Influence Theory. This multitheory approach provides a comprehensive understanding of the interplay between economic, sociocultural, and structural factors shaping reproductive behavior. Easterlin's demand–supply framework posits that fertility outcomes are shaped by the balance between the demand for children, the supply of children, and the costs associated with fertility regulation (Bongaarts, 1993; Easterlin, 1975; Qamar, 2022). The demand for children reflects socioeconomic and cultural influences on desired family size, while supply refers to the biological capacity for childbearing, influenced by health and mortality rates (Bongaarts, 2020). Couples regulate fertility through contraception when the cost of having additional children outweighs the perceived benefits (Bwalya *et al.*, 2023). Economic development, increased female education, and urbanization have been associated with reduced fertility desires, as women weigh career opportunities and financial stability against childbearing (Muhoza, 2019).

The GAD framework emphasizes the role of gender power dynamics in shaping access to reproductive health services and decision-making autonomy. Patriarchal structures in many SSA societies restrict women's agency in determining their reproductive choices, including contraception use and fertility preferences (Ahinkorah *et al.*, 2021; Kidie *et al.*, 2024). Women with limited autonomy often face barriers to negotiating contraceptive use or limiting childbearing, as male partners, extended family, or cultural norms may dictate reproductive decisions (Oronje *et al.*, 2011). Empowering women through education, economic independence, and policy interventions that promote gender equality can enhance their ability to act on fertility preferences and make informed reproductive health decisions (Atake & Gnakou Ali, 2019).

On the other hand, the Social Influence Theory highlights how societal norms, peer expectations, and religious beliefs shape individual fertility decisions. In SSA, fertility is often tied to social status, with large families symbolizing wealth, lineage continuity, and social security (Hoyweghen *et al.*, 2022; Qamar, 2022). Religious doctrines, community leaders, and peer networks influence perceptions of ideal family size and contraceptive use (Ahinkorah *et al.*, 2021; Muluneh & Moyehodie, 2021). In contexts where high fertility is culturally reinforced, women may feel pressured to have more children despite personal preferences to limit births. Understanding these social pressures is crucial for designing culturally sensitive family planning programs that address communal attitudes while promoting reproductive autonomy (Church *et al.*, 2023).

By combining Easterlin's demand–supply framework with the GAD framework and the Social Influence Theory, this study provides a more holistic analysis of the determinants of the desire to limit childbearing among married women in SSA. Easterlin's model explains the economic and demographic drivers of fertility decisions, whereas the GAD framework highlights gender-based constraints, and the Social Influence Theory contextualizes fertility choices within broader social and cultural expectations. This integrated approach offers critical insights for policymakers and reproductive health practitioners, emphasizing the need for multi-faceted interventions that address economic constraints, gender inequalities, and sociocultural norms influencing fertility behavior in SSA.

2. Data and methods

2.1. Data source and sample size

“The data for this study were drawn from the latest Demographic and Health Surveys (DHS) conducted in four SSAnations: Gabon (2019 DHS), Mali (2018 DHS), Tanzania

(2022 DHS), and Zambia (2018 DHS). The DHS program, which provides nationally representative household data, is carried out by national statistics agencies in many developing countries, with support from international partners such as Inner City Fund International and the United States Agency for International Development. The DHSs employed a stratified two-stage sampling approach. In the first stage, enumeration areas were selected with a probability based on the size of each stratum. In the second stage, households are systematically selected with equal probability in each enumeration area. All women aged 15 – 49 years and men aged 15 – 59 years who had stayed overnight in the selected household preceding the interview date were eligible for inclusion in the survey. The DHS utilizes standardized questionnaires to gather data, including the Household Questionnaire, Woman's Questionnaire, Man's Questionnaire, and Biomarker Questionnaire (Croft *et al.*, 2018). Each country's survey report provides a detailed explanation of the methodologies used in these surveys (Croft *et al.*, 2018). Our study used the module on Contraceptive Use and Fertility Preferences, which is included in the individual women's recode file. The DHS datasets are publicly available from the DHS website (<https://dhsprogram.com/>; Croft *et al.*, 2018). The samples of women interviewed in each country were as follows: Gabon ($n = 11,043$), Mali ($n = 10,519$), Tanzania ($n = 13,266$), and Zambia ($n = 13,683$). These samples translated into overall response rates of 96%, 95%, 97%, and 97%, respectively. However, in this analysis, we restricted the samples to married women who had the desire to limit childbearing. This resulted in the following study sample ($n = 3,664$) for Gabon, ($n = 6,782$) for Mali, ($n = 6,946$) for Tanzania, and ($n = 6,674$) for Zambia.

2.2. Measurement of study variables

2.2.1. Outcome variable

The outcome variable for this study is the desire to limit childbearing. For this analysis, the desire to limit childbearing refers to an individual woman's preference to control the number of children she wants to have. In the DHS, all women who had given birth were asked a question: "Would you like to have another child, or would you prefer not to have any more children?" To facilitate our analysis, we restricted the analysis to married women who indicated that they desired to have another child or wanted no more children. Women whose responses were coded as undecided were removed from the analysis sample. A binary variable was created to facilitate binary logistic regression. The outcome variable was coded "1," representing women who indicated that they wanted no more children, and "0," representing women who wanted to have another child in the future.

2.2.2. Independent variables

Explanatory factors were chosen based on the body of existing literature (Adilo & Wordofa, 2017; Ahinkorah *et al.*, 2020; Casterline & Agyei-Mensah, 2017; Phiri *et al.*, 2023a; 2023b; Shiferaw *et al.*, 2019). The following variables were included: a woman's age, place of residence, educational attainment, partner's educational attainment, parity, living children, household's wealth status, employment status, decision-making about health, informed about family planning at a health facility, and exposure to media family planning information. These variables were divided into two groups: Variables at the individual and contextual levels. The variables were categorized as age (15 – 24 years, 25 – 34 years, and 35 – 49 years), education attainment (no education, primary level, secondary level, and tertiary level), partners' education (no education, primary level, secondary level, and tertiary level), employment status (working or not working), parity (1 – 2, 3 – 4, and 5+), and other individual variables (yes or no), such as was informed about family planning at health facilities, visited a health facility in last the 12 months, and exposure to mass-media family planning information. Contextual level variables included residence (urban or rural) and household wealth status (poor, middle, or rich).

The initial analysis included the following variables: Contraceptive use, ideal number of children, age at first sexual activity, and age at first marriage. However, after a thorough review of the literature, these variables were removed from the analysis due to ambiguity in their relationship significance to explain the desire to limit childbearing among women. Contraceptive use may not directly indicate a desire to limit childbearing, as it could also reflect spacing intentions. The ideal number of children is often influenced by cultural and social desirability biases, making it unreliable as a predictor of limiting behavior. Furthermore, age at first sexual activity and age at first marriage may have no direct influence on the desire to limit childbearing, as reproductive intentions are shaped more by factors such as socioeconomic status, health concerns, and access to family planning rather than the timing of these life events. Their exclusion ensured a more consistent analysis of the true drivers of the desire to limit childbearing among women.

2.3. Statistical analysis

"Statistical analysis was performed using Stata version 17 software with a 95% confidence interval (CI). The analysis considered survey design, cluster effect, and post-stratification weights in the DHS datasets. Statistical analysis was conducted in three stages. In the first stage, a univariate analysis was conducted to describe

variations in the prevalence of desire to limit childbearing among married women in SSA countries with a series of frequencies and percentage distributions. Bivariate analysis was then performed through cross-tabulation of the independent variable with the outcome variable using Pearson's Chi-square test. Finally, a multivariate binary logistic regression analysis was performed between the dependent variable and various independent variables. Adjusted odds ratios (AORs) with corresponding *p*-values were calculated. Multivariate logistic regression models were performed for each country. Multicollinearity was assessed for all the predictor variables to separate the independent effects of the interrelated variables. Below is the binary logistic regression equation presented in Equation 1,

$$\text{Logit} [P (y = 1)|X_1...X_k] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (I)$$

where β_0 is the intercept, β_1 is the regression coefficient, and $X_1...X_k$ are the independent variables (Warner, 2008).

2.4. Ethical approval

Permission to access the datasets for Gabon, Mali, Tanzania, and Zambia was requested from the DHS Program. Since all ethical protocols were adhered to by Inner City Fund International and the respective national statistical agencies during the original data collection process, no additional ethical approval was required for the secondary analysis (DHS Program, 2021). The dataset that was analyzed is publicly available and may be found on the website (<https://dhsprogram.com/>).

3. Results

3.1. Description of sample characteristics

Table 1 shows the background characteristics of women included in the study. The majority of the married women in the three countries lived in rural areas: Tanzania (77%), Zambia (59%), and Mali (78%). In Gabon, a greater proportion (69%) of the married women resided in urban areas. With regard to women's education, the highest proportion of women without formal education was in Mali (72.6%), followed by Tanzania with 19.4%. In Zambia and Gabon, married women without education were 9.3% and 8.2%, respectively. The percentage of married women who had higher education was highest in Gabon (14.9%) and lowest in Tanzania (1.1%), whereas the majority of married women in Tanzania and Zambia had primary education (66.1% and 50.7%, respectively).

Results for wealth status show that in all four countries, the majority of married women were from rich households, in Gabon (46.2%), Mali (40.8%), Tanzania (41.4%), and Zambia (41.0%). On the other hand, the lowest proportion

of married women was from the middle-income level households in all the countries, in Gabon (21.8%), Mali (20.8%), Tanzania (19.0%), and Zambia (19.0%). A greater proportion of the women in Gabon (52.9%), Mali (58.7%), Tanzania (78.9%), and Zambia (51.7%) were working at the time of the survey.

Figure 1 shows the proportion of married women who desired to limit childbearing in SSA countries. In terms of country-based analysis, Zambia had the highest proportion of married women who desired to limit childbearing, 40.7% (95% CI: 39.3 – 42.1), whereas Mali had the lowest, 23.9% (95% CI: 22.7 – 25.2).

3.2. Distribution of married women who desire to limit childbearing by background characteristics

Table 2 shows the bivariate analysis of the association between the independent variables and the desire to limit childbearing among married women in the four countries included in the study. In all four countries, the age of a woman was significantly associated with the desire to limit childbearing. The desire to limit childbearing was highest among older women aged 35 – 49 in all the countries, Gabon (48.3%), Mali (60.1%), Tanzania (59.6%), and Zambia (74.3%). However, the desire to limit childbearing was lowest among married women aged 15 – 24 years in all the countries, with 13.9%, 1.2%, 4.0%, and 9.4% for Gabon, Mali, Tanzania, and Zambia, respectively.

In Zambia, living in urban areas was significantly associated with a high desire to limit childbearing (43.2% in urban vs. 39% in rural). Contrary to Zambia, in Gabon, women living in rural areas were more likely to have the desire to limit childbearing compared to those living in urban areas (39% in rural vs. 31.2% in urban).

Women's level of education was significantly associated with the desire to limit childbearing in all countries. Women who had a secondary education level had lower reports of desire to limit childbearing in Mali (10.8%), Tanzania (20.9%), and Zambia (31.9%). In Gabon and Tanzania, women with primary education (40.5% in Gabon and 32.2%

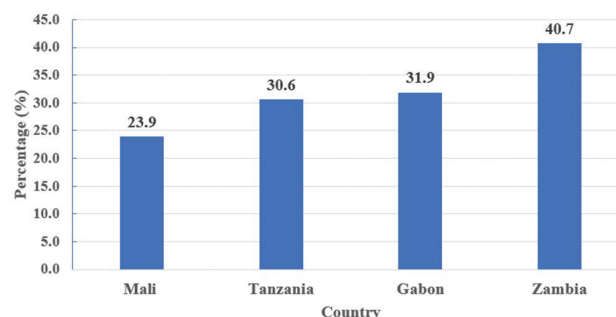


Figure 1. Distribution of married women who desired to limit childbearing in sub-Saharan African countries

Table 1. Distribution of background characteristics of married women (15 – 49 years)

Background characteristics	Gabon (n=3,664)	Mali (n=6,782)	Tanzania (n=6,946)	Zambia (n=6,674)
Age (%)				
15 – 24	13.0	26.3	24.1	23.9
25 – 34	42.8	43.1	39.9	40.0
35 – 49	44.2	30.6	36.0	36.1
Residence (%)				
Urban	68.6	22.3	30.3	40.8
Rural	31.4	77.7	69.7	59.2
Women's education (%)				
None	8.2	72.6	19.4	9.3
Primary	16.0	12.1	66.1	50.7
Secondary	60.9	13.8	13.4	34.9
Tertiary	14.9	1.5	1.1	5.1
Partners' education (%)				
None	10.8	73.5	12.3	5.7
Primary	7.3	9.4	69.0	36.7
Secondary	54.3	12.6	15.7	48.3
Tertiary	27.6	4.5	3.0	9.3
Wealth status (%)				
Poor	32.0	38.3	39.6	40.0
Middle	21.8	20.8	19.0	19.0
Rich	46.2	40.8	41.4	41.0
Working status (%)				
Not working	47.1	41.3	21.1	48.3
Working	52.9	58.7	78.9	51.7
Parity (%)				
1 – 2	41.8	31.8	38.8	35.2
3 – 4	34.7	28.2	29.3	30.0
5+	23.5	40.0	31.9	34.8
Was informed about family planning at a health facility (%)				
No	80.8	66.4	60.7	50.1
Yes	19.2	33.6	39.3	49.9
Visited a health facility in the last 12 months (%)				
No	35.9	48.7	27.7	28.8
Yes	64.1	51.3	72.3	71.2
Exposure to media family planning messages (%)				
No	73.7	59.5	32.7	76.3
Yes	26.3	40.5	67.3	23.7

in Tanzania) had the highest desire to limit childbearing. However, in Mali and Zambia, married women with no education had the highest desire to limit childbearing (27.3% and 52.6% in Mali and Zambia, respectively).

As expected, in all four countries, working status was significantly associated with a higher desire to limit

childbearing. Women who reported working at the time of the survey were more likely to have the desire to limit childbearing: Gabon (35.6%), Mali (26.6%), Tanzania (32.3%), and Zambia (44.1%)

Household wealth status was also significantly associated with the desire to limit childbearing in Tanzania

Table 2. Distribution of married women who desire to limit childbearing by background characteristics

Background characteristics	Gabon (<i>n</i> =3,664)	Mali (<i>n</i> =6,782)	Tanzania (<i>n</i> =6,946)	Zambia (<i>n</i> =6,674)
Age	***	***	***	***
15 – 24	68 (13.9)	23 (1.2)	66 (4.0)	152 (9.4)
25 – 34	331 (20.4)	374 (12.1)	567 (20.6)	785 (29.1)
35 – 49	812 (48.3)	1,318 (60.1)	1,477 (59.6)	1,806 (74.3)
Residence	***	ns	ns	***
Urban	1,087 (31.2)	374 (23.4)	675 (32.4)	1,188 (43.2)
Rural	125 (39.0)	1,342 (24.1)	1,435 (29.9)	1,555 (39.0)
Women's education	***	***	***	***
None	109 (34.7)	1,419 (27.3)	413 (30.8)	331 (52.6)
Primary	246 (40.5)	178 (20.5)	1,465 (32.2)	1,525 (44.6)
Secondary	740 (32.0)	107 (10.8)	192 (20.9)	752 (31.9)
Tertiary	117 (20.7)	12 (11.0)	40 (51.9)	136 (40.0)
Partner's education	*	***	*	***
None	91 (26.4)	1,298 (25.6)	242 (28.6)	169 (45.4)
Primary	94 (40.5)	138 (21.4)	1,523 (32.1)	1,085 (45.5)
Secondary	544 (31.5)	183 (21.0)	280 (26.0)	1,126 (35.9)
Tertiary	261 (29.8)	42 (13.3)	65 (31.2)	248 (40.9)
Working status	***	***	***	***
Not working	496 (27.7)	595 (20.0)	354 (24.4)	1,204 (37.0)
Working	716 (35.6)	1,121 (26.6)	1,756 (32.3)	1,540 (44.1)
Parity	***	***	***	***
1 – 2	185 (11.7)	75 (3.3)	176 (6.6)	262 (11.0)
3 – 4	426 (32.3)	259 (12.9)	602 (29.8)	739 (36.7)
5+	601 (67.1)	1,381 (48.1)	1,332 (60.6)	1,742 (74.2)
Wealth status	ns	ns	***	***
Poor	432 (35.6)	702 (25.5)	761 (27.9)	995 (36.9)
Middle	244 (29.4)	348 (23.3)	430 (32.9)	554 (43.3)
Rich	536 (30.5)	666 (22.7)	919 (32.2)	1,195 (43.2)
Husband's desire for children	***	**	***	***
Both want the same	318 (32.5)	238 (20.5)	851 (30.1)	1,051 (37.9)
Husband wants more	276 (28.2)	854 (25.4)	669 (37.0)	746 (45.9)
Husband wants a few	57 (17.8)	74 (28.3)	129 (30.4)	242 (40.9)
Decision-making about own health	ns	***	***	***
Woman	340 (31.4)	176 (32.9)	444 (40.4)	1,198 (43.1)
Woman and husband/partner	543 (31.6)	267 (30.1)	1,177 (30.2)	1,077 (40.0)
Husband/partner alone	326 (33.2)	1,253 (22.3)	484 (25.9)	467 (37.1)
Exposure to media family planning messages	*	ns	**	ns
No	928 (33.1)	1,021 (23.9)	644 (28.5)	2,088 (40.2)
Yes	284 (28.4)	695 (23.9)	1,466 (31.7)	675 (42.2)

Note: Data presented as *n* (%) unless stated otherwise; Statistical significance determined at **p*<0.05, ***p*<0.01, and ****p*<0.001.

Abbreviation: ns: Non-significant.

and Zambia. Women from poor households (27.9% in Tanzania and 36.9% in Zambia) had lower reports of

desire to limit childbearing compared to those from middle and rich households. Regarding contraceptive

use, in Tanzania, women who were using contraceptives had higher reports of desire to limit childbearing (34.5%). Women who indicated having six or more living children were more likely to have the desire to limit childbearing in all the countries: Gabon (80.2%), Mali (65.1%), Tanzania (71.8%), and Zambia (86.8%).

3.3. Determinants of desire to limit childbearing

Table 3 shows the AORs of the multivariable logistic regression examining the association between independent correlates and desire to limit childbearing in the four SSA countries (Gabon, Mali, Tanzania, and Zambia). Results show that in all four countries, as the age of a woman increased, the likelihood of the desire to limit childbearing increased. Women in the age group 35 – 49 years in Gabon (aOR = 2.24; 95% CI: 1.80 – 3.60), in Mali (aOR = 17.97; 95% CI: 12.28 – 26.30), Tanzania (aOR = 7.19; 95% CI: 5.25 – 9.83), and Zambia (aOR = 5.84; 95% CI: 4.51 – 7.56) were more likely to have the desire to limit childbearing compared to those in the age group 15 – 19 years.

In Zambia, women who were residing in rural areas (aOR = 0.73; 95% CI: 0.58 – 0.92) had lower odds of the desire to limit childbearing than their counterparts living in urban areas. As expected, increasing parity was significantly associated with a high likelihood of the desire to limit childbearing in all four countries. Women with parity 1 – 2, in Gabon (aOR = 0.10; 95% CI: 0.08 – 0.14), in Mali (aOR = 0.15, 95% CI: 0.11 – 0.19), in Tanzania (aOR = 0.08; 95% CI: 0.06 – 0.10), and in Zambia (aOR = 0.07; 95% CI: 0.06 – 0.09), had lower odds of the desire to limit childbearing compared to those with parity of five or more.

Regarding household wealth status, married women in Zambia who belonged to households classified as rich were significantly more likely to limit childbearing compared to those who belonged to poor households (aOR = 1.62; 95% CI: 1.28 – 2.05). Similarly, women who were working in Gabon (aOR = 1.06; 95% CI: 0.89 – 1.28) had higher odds of the desire to limit childbearing compared to those not working.

In Mali and Tanzania, married women who had access to family planning information were significantly associated with the desire to limit childbearing (aOR = 0.76; 95% CI: 0.60 – 0.95 and aOR = 1.29; 95% CI: 1.12 – 1.48, respectively). In regard to the husband's desire for children, in Tanzania (aOR = 0.68; 95% CI: 0.51 – 0.90), women who had husbands wanting a few children had lower odds of the desire to limit childbearing compared to those who reported having husbands who wanted more children.

4. Discussion

This study sought to examine determinants of the desire to limit childbearing among married women in SSA

countries. Many prior studies on fertility preferences in SSA focused on examining factors that influence the desire to have additional children among married women. The study found differing results in terms of the prevalence and drivers of the desire to limit childbearing across different countries examined. Mali had the lowest proportion of women willing to limit childbearing, whereas Zambia had the highest. These differences could be explained by heterogeneity in social, economic, and cultural norms across SSA countries (Adhikari, 2010; Muhoza, 2019; Nibaruta *et al.*, 2023; Wildeman *et al.*, 2023). In Mali, traditional views often emphasize large families, with children seen as a source of social and economic support. Understanding the factors that explain women's desire to limit childbearing is crucial for designing effective family planning programs and policies that address women's reproductive health needs, promote autonomy, and support informed decision-making on high fertility levels in SSA. To achieve this, we examined four countries that have been reported to have high fertility rates in SSA (Bongaarts, 2020; Casterline & Agyei-Mensah, 2017; Tesfa *et al.*, 2023).

Results show that older married women were more likely to limit childbearing in Gabon, Tanzania, Zambia, and Mali compared to young women. Similar findings have been reported in prior studies conducted in Ethiopia, Ghana, Cameroon, Nigeria, and Mozambique (Babalola *et al.*, 2017). These findings align with broader demographic trends where age plays a significant role in reproductive choices (Teshale *et al.*, 2022). As women age, they are more likely to have achieved their desired family size and may prioritize economic stability, health, and child-rearing responsibilities over further childbearing (Casterline, 2017). In contrast, another study in SSA has reviewed that young women often intend to limit their births, contrary to the assumption that only older women do (Van Lith *et al.*, 2013). In addition, older women may have greater access to family planning information and services, enabling them to make informed decisions about limiting fertility (Casterline, 2017). The findings suggest the need to strengthen access to and utilization of family planning services in SSA countries with high fertility, especially among older women, to enable them to attain their reproductive health goals.

Our study found that married women in Mali who were living in rural areas were highly likely to limit childbearing compared to those living in urban areas. Married women living in rural areas in Mali may be more inclined to limit childbearing due to the economic pressures and resource constraints typically associated with rural living. Larger families can pose a challenge in rural settings where access

Table 3. Association between background characteristics and women's desire to limit childbearing

Background characteristics	Gabon (<i>n</i> =3,664) Pseudo R ² =0.2149		Mali (<i>n</i> =6,782) Pseudo R ² =0.3236		Tanzania (<i>n</i> =6,946) Pseudo R ² =0.2879		Zambia (<i>n</i> =6,674) Pseudo R ² =0.3256	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Age								
15 – 24	Ref		Ref		Ref		Ref	
25 – 34	1.02	(0.72 – 1.43)	2.59***	(1.77 – 3.78)	2.16***	(1.59 – 2.23)	1.37***	(1.08 – 1.74)
35 – 49	2.54***	(1.80 – 3.60)	17.97***	(12.19 – 26.30)	7.19***	(5.25 – 9.83)	5.84***	(4.51 – 7.56)
Parity								
1 – 2	0.10***	(0.08 – 0.14)	0.15***	(0.11 – 0.19)	0.09***	(0.06 – 0.10)	0.07***	(0.06 – 0.09)
3 – 4	0.32***	(0.26 – 0.39)	0.32***	(0.27 – 0.39)	0.38***	(0.33 – 0.45)	0.27***	(0.23 – 0.89)
5+	Ref		Ref		Ref		Ref	
Residence								
Urban	Ref		Ref		Ref		Ref	
Rural	1.03	(0.83 – 1.27)	0.84*	(0.68 – 1.04)	0.74	(0.62 – 0.88)	0.74***	(0.61 – 0.89)
Women's education								
No education	Ref		Ref		Ref		Ref	
Primary	1.20	(0.82 – 1.76)	1.12	(0.88 – 1.43)	1.26***	(1.06 – 1.48)	0.88	(0.71 – 1.09)
Secondary	1.04	(0.72 – 1.50)	0.89	(0.66 – 1.21)	0.90	(0.70 – 1.17)	0.83	(0.64 – 1.08)
Tertiary	0.74	(0.44 – 1.24)	0.73	(0.34 – 1.57)	1.59	(0.75 – 3.36)	0.95	(0.63 – 1.44)
Wealth status								
Poor	Ref		Ref		Ref		Ref	
Middle	0.87	(0.66 – 1.14)	1.02	(0.84 – 1.24)	1.02	(0.92 – 1.30)	1.24*	(1.04 – 1.49)
Rich	1.20	(0.94 – 1.50)	1.13	(0.91 – 1.40)	1.11	(0.94 – 1.35)	1.62***	(1.28 – 2.05)
Working status								
No	Ref		Ref		Ref		Ref	
Yes	1.04	(0.89 – 1.28)	0.92	(0.79 – 1.07)	1.23	(0.95 – 1.33)	0.89*	(0.78 – 1.01)
Husband's education								
No education	Ref		Ref		Ref		Ref	
Primary	1.12	(0.77 – 2.50)	0.89	(0.68 – 1.15)	1.14	(0.94 – 1.39)	1.19	(0.90 – 1.56)
Secondary	0.90	(0.65 – 1.25)	1.38**	(1.07 – 1.79)	1.04	(0.80 – 1.36)	1.19	(0.89 – 1.58)
Tertiary	0.92	(0.61 – 1.38)	1.02	(0.63 – 1.66)	1.81**	(1.13 – 2.93)	1.34	(0.91 – 1.98)
Husband's desire for children								
Both want the same	Ref		Ref		Ref		Ref	
Husband wants more	0.73***	(0.57 – 0.93)	1.16	(0.93 – 1.44)	0.85*	(0.73 – 1.00)	1.04	(0.88 – 1.22)
Husband wants a few	0.63***	(0.44 – 0.92)	1.67	(1.10 – 2.53)	0.68**	(0.51 – 0.90)	0.88	(0.69 – 1.13)
Do not know	1.00	(0.80 – 1.27)	1.09	(0.87 – 1.36)	0.61***	(0.52 – 0.72)	0.92	(0.78 – 1.08)
Decision-making								
Woman	1.05	(0.82 – 1.35)	1.46	(1.13 – 1.09)	1.57***	(1.29 – 1.91)	1.24**	(1.03 – 1.48)
Woman/partner	0.92	(0.74 – 1.24)	1.30**	(1.06 – 1.59)	1.13	(0.97 – 1.31)	1.17	(0.97 – 1.41)
Others	0.501*	(0.12 – 1.208)	1.32	(0.68 – 2.55)	1.31	(0.38 – 4.51)	1.39	(0.41 – 4.72)
Husband/partner alone	Ref		Ref		Ref		Ref	
Exposure to media family planning information								
No	Ref		Ref		Ref		Ref	
Yes	0.76**	(0.001 – 0.95)	0.96	(0.82 – 1.11)	1.29	(1.12 – 1.48)	1.04	(0.88 – 1.22)

Notes: Do not know is referring to a category of an independent variable (Husband's desire for children) ; Statistical significance determined at * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Abbreviations: AOR: Adjusted odds ratio; CI: Confidence interval; Ref: Reference.

to health care, education, and financial resources may be limited, making it difficult for families to adequately support more children. On the contrary, in Zambia, married women who were living in rural areas were less likely to limit childbearing compared to those living in urban areas. Compared to Mali, Zambia has experienced economic transitions that influence family planning decisions. In urban areas with higher living costs and greater access to education and employment opportunities, women may choose to delay marriage and childbearing, leading to a reduced desire to limit fertility later. Conversely, in rural settings where economic benefits are tied to larger families, early marriage and higher fertility may remain prevalent (Teshale *et al.*, 2022). Other studies in SSA have also reported similar results (Ahinkorah *et al.*, 2021). This is an expected result and reflects rural-urban disparities in socioeconomic conditions among women. Women living in urban areas are likely to be more educated and increasingly exercise autonomy over their reproductive health (Samuel *et al.*, 2021). On the other hand, women living in rural areas often face challenges with access to reproductive health services. However, these trends may vary across countries in SSA. This particular finding could highlight the need for improved reproductive health-care access delivery, especially in rural areas where women usually walk long distances to access maternal health care.

In all the countries analyzed, we found that married women with lower parity were less likely to limit childbearing compared to those with higher parity. Women with fewer children are often influenced by societal expectations, economic considerations, and partner or family pressures to continue childbearing until they reach what is considered an acceptable family size (Tufa *et al.*, 2023). In contrast, those with higher parity may feel they have fulfilled these expectations, making them more willing to consider limiting childbearing due to health, economic, and personal reasons. In addition, lower parity women may have been less likely to receive education or counseling on family planning after a few births, especially in settings where maternal health services are not fully provided during antenatal care (Ahinkorah *et al.*, 2021). Furthermore, married women with fewer children often have less knowledge or access to contraception, particularly in rural or underserved areas, such as Mali and Zambia, where lower contraceptive awareness can prevent them from even contemplating limiting childbearing due to a lack of means (Gilda & Ashford, 2016; Namukoko *et al.*, 2022). Similar dynamics may be observed in other countries where religious influences shape family-size decisions (Ahinkorah *et al.*, 2021). This finding suggests the need to provide comprehensive reproductive health education to women, especially during their early years

of childbearing, which could help them make informed decisions about family size.

The findings of this study pose the need for strengthening family planning initiatives in SSA countries to enable women to achieve their desired family size. Educational campaigns that highlight the health, economic, and social benefits of smaller family sizes can help balance the traditional values of large families while offering alternatives. The desire to limit childbearing is associated with contraceptive use. Women who are often exposed to family planning information through health services, outreach programs, or community education are more aware of the options available to control the number and timing of their children (Bwalya *et al.*, 2023; Teshale *et al.*, 2022). This knowledge influences their decision to limit childbearing. This study is an eye-opener to expanding access to a wide range of contraceptive methods, particularly in rural and underserved areas, which can empower more women to control their fertility and limit childbearing.

Our study found that in Mali, Tanzania, and Zambia, married women who participated in household decision-making were more likely to limit childbearing compared to those who did not. Women involved in household decision-making often have greater autonomy over key aspects of their lives, including reproductive choices, which allows them to make informed decisions about the number of children they want (Demissie *et al.*, 2022). In addition, women who participate in household decisions tend to have better communication and negotiation power with their partners regarding family size, enabling couples to discuss and agree on limiting childbearing after reaching a mutually desired number of children. In societies where women's access to education and employment is limited, early marriage and higher fertility are often normative, as seen in Mali. Enhancing women's socioeconomic status through education and workforce participation can shift these norms, empowering women to make informed reproductive choices and potentially leading to a preference for smaller families. A similar study done in Nigeria found that those women who participated in household decisions had a higher desire to limit childbearing than those who did not participate (Atake & Gnakou Ali, 2019). This study's findings catalyze the need for empowerment programs to enhance women's participation in household decision-making by promoting gender equality in the family.

This study applied Easterlin's demand-supply framework, the GAD framework, and the Social Influence Theory, which provide a more holistic analysis of the determinants of the desire to limit childbearing among married women in SSA. Easterlin's model explains the

economic and demographic drivers of fertility decisions, which offers an integrated framework that combines economic factors and sociological perspectives to explain variations in fertility rates, while the GAD framework highlights gender-based constraints, and the Social Influence Theory contextualizes fertility choices within broader social and cultural expectations. This integrated approach offers critical insights for policymakers and reproductive health practitioners, emphasizing the need for multi-faceted interventions that address economic constraints, gender inequalities, and sociocultural norms influencing fertility behavior in SSA. By accounting for economic, sociocultural, and structural factors, the theories provide a comprehensive understanding of decisions regarding fertility desire.

While the study offers valuable insights that could enhance existing family planning initiatives aimed at reducing high fertility among married women in SSA, the development of targeted interventions will require a more nuanced approach. Conducting a detailed decomposition analysis of both individual and community-level factors is essential to uncover the drivers of variability in the desire to limit childbearing across different countries in SSA. For countries with a lower prevalence of this desire, adopting and adapting successful family planning strategies from nations where the issue is less pronounced could prove effective.

4.1. Policy implications of the study findings

This study has several policy implications for the SSA region. The results highlight that older women and those with higher parity are more likely to have a desire to limit childbearing, underscoring the importance of promoting modern contraceptive use. Health policy initiatives should prioritize expanding access to reproductive health education and family planning services to increase women's ability to make informed reproductive choices, particularly in rural and underserved areas where accessibility remains a challenge. Results also reveal that women exposed to mass media on family planning information in Tanzania had higher odds of the desire to limit childbearing than their counterparts. Therefore, nationwide mass media campaigns should be launched using television, radio, and social platforms to promote modern contraceptive methods. Collaborating with local community leaders will further help dispel myths such as the use of contraceptives, especially among young or unmarried women, encourage promiscuity and immoral behavior, and increase informed decision-making. Women's participation in household decision-making is associated with a higher likelihood of limiting childbearing. Therefore, initiatives that promote women's empowerment and reproductive decision-making

autonomy should be prioritized in SSA countries. This is because such interventions have the potential to enhance education and economic opportunities for women. Furthermore, the initiatives help women to achieve reproductive autonomy, enabling them to make informed choices about family planning and childbearing.

4.2. Strengths and limitations

The results of this analysis can be generalized to the total population of married women of childbearing age in the countries where the study was conducted. This is because the study included a nationally representative sample of women who had given birth. The DHS dataset's standard methodology made it possible to compare the findings across countries. However, because the DHS applied a cross-sectional study design, causality cannot be inferred in this study. Further, due to the respondents being asked to report prior occurrences, there is also a chance of recall bias. This can result in underreporting or overreporting of events, affecting the reliability and validity of the results.

5. Conclusion

This study highlights significant differences in the desire to limit childbearing among married women in four SSA countries, with Zambia having the highest prevalence and Mali the lowest. These differences underscore the need for context-specific interventions to address high fertility rates. Key determinants include age, parity, decision-making autonomy about a woman's health, and ideal number of children, with additional factors such as contraceptive use, education, and wealth status varying across countries. Policymakers should expand educational opportunities, improve contraceptive access, and empower women in marginalized communities. Beyond the four African countries analyzed, these findings have broader implications for global fertility trends. Fertility rates are declining worldwide due to economic conditions, cultural shifts, and evolving personal aspirations. The study underscores the relationship between women's ideal number of children and their desire to limit childbearing, emphasizing the need to integrate fertility preferences into reproductive health policies. In regions where large families are preferred, such as parts of the Middle East, South Asia, and Latin America, fertility rates may remain above replacement levels, impacting population growth. Conversely, in European and East Asian nations, sub-replacement fertility presents workforce shortages and aging populations. To address these trends, policymakers must tailor family planning initiatives to local contexts. High-fertility regions need better education, contraception access, and economic opportunities, while low-fertility countries may benefit from childcare subsidies and

parental leave policies. Understanding fertility motivations is crucial for designing effective interventions. These insights contribute to discussions on demographic change and reproductive behavior. Addressing both high and low fertility challenges through evidence-based, culturally sensitive strategies can promote sustainable population dynamics and economic stability.

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Conflict of interest

The authors declare no competing interests.

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Ethics approval and consent to participate

“Since the data for this analysis were obtained from publicly available secondary sources, there was no need for approval from an ethics committee. However, all required procedures and guidelines were observed to access the DHS datasets through the DHS program. The DHS protocols ensured that ethical standards were met before data collection in Zambia. For participants over the age of 18, consent was obtained during the survey process, whereas parents or guardians provided consent for participants aged 15 to 17, who also gave their own consent as minors.

Consent for publication

Not applicable.

Availability of data

The data utilized in this study can be accessed publicly through the IPUMS DHS or DHS Program websites: <https://www.idhsdata.org/idhs/>, <https://dhsprogram.com/>.

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