Perceived Ideal Number of Children Among Adolescents in Sub-Saharan Africa: Does Exposure to Family Planning Messages Matter?

Million Phiri (million.phiri@unza.zm)
University of Zambia

Musonda Lemba
University of Zambia

Simona Simona
University of Zambia

Milika Sikalunzwe
University of Zambia

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Abstract

Background

Even though evidence shows that fertility transition has begun almost everywhere in sub-Saharan Africa, the decline has been slower than in other parts of the world. Research shows that there is a positive relationship between fertility levels and desired family size. Therefore, many countries in the region are implementing family planning education campaigns targeting at influencing reproductive behaviour of women. Thus, this study aimed at examining the extent to which exposure to family planning communication is associated with desired family size in adolescence in sub-Saharan Africa.

Methods

This study used data extracted from the most recent Demographic and Health Survey datasets for 28 countries in sub-Saharan Africa. Analyses were conducted on a pooled weighted sample of 87,950 female adolescents aged 15-19 years captured in respective country surveys. Multivariate logistic regression models were fitted in Stata version 16 software to examine the effects of exposure to family planning communication on adolescents desired family size.

Results

Findings show that regardless of the country, exposure to family planning communication among adolescents had a significant effect on desire for fewer children. Average ideal family size among adolescents who had exposure to family planning communication was (3.8 children compared to 4.5 children; p<0.001) among those with no exposure. Marital status, wealth status, education level, contraceptive use and employment status were also significantly associated with adolescents’ desired family size. Country level differences were observed regarding desired family size among adolescents. Adolescents from West Africa Countries had higher desired family size.

Conclusion

Exposure to family planning communication has shown the potential to influence adolescents’ fertility behavior in the region. Desire for large family size is predominantly high among adolescents from West and Central African countries. Suggesting that high fertility remains a social concern in these regions. Furthermore, the study found sub-regional variations in determinants of desired family size among adolescents. Calling for the need to scale-up family planning education programmes especially in West and Central Africa countries.

Background

Population growth remains a major subject of concern among development practitioners, policy makers and demographers among other professionals the world over (1,2). It is forecasted that the world population will reach 9.73 billion around mid-century (2). This growth rate has negative consequences
including food insecurity, environmental degradation, poverty, unemployment, low quality of life, uncontrolled urbanization, climate change and political turmoil (3,4). However, it is well-known that population growth and projections are not uniform across sub-regions in sub-Saharan Africa (5–8). Sub-Saharan Africa (SSA) is one of the regions among the developing world where population size has been increasing faster than it can generate resources to support it (2,5). Recent statistics show that the average total fertility rate for sub-Saharan Africa is 4.8 children per woman compared to an average of 3.8 children per woman for all least developing countries worldwide (5). Evidence shows that even though fertility transition has begun almost everywhere, the decline has been slower in SSA compared to other parts of the world (8–12).

However, sub-Saharan African countries are not homogeneous as there are important regional variations in total fertility rate. As of 2015, the total fertility rate in many countries in Eastern and Southern Africa has been on the decline trajectory, whereas the total fertility rate in Western and Central Africa has remained stable at approximately 6 children per woman (1,13). Fertility has been predominantly higher in Western and Central Africa due to two major factors. In the first place, there has been a low uptake of family planning, with little improvement over time (1,14,15). Another factor that has an adverse impact on family planning programming is fertility desire, which has been predominantly pro-natal.

There is consensus in literature that access to family planning education influences reproductive outcomes such as age at first sex, contraception, age at first birth, teenage pregnancy and fertility preferences among women of reproductive age (16–20). Given the observed high levels of fertility in SSA (6,8,21), family planning education campaigns have focused on disseminating messages on benefits of smaller family sizes on both maternal and child health. Demographic evidence indicates that there is a positive relationship between fertility levels and desired family size (6,7). So that a decrease in desired family size is likely to result in a decline in total fertility rate. It is therefore prudent that such campaigns should target changing reproductive behaviors of people, especially adolescents. This is because adolescents’ perceived ideal number of children is highly likely to impact on a country’s future fertility course (22–25). Earlier studies conducted in Guinea, Ethiopia, Nigeria, Ghana and Zambia showed that family planning education influenced women’s reproductive behavior, including desire for smaller family size and increased contraceptive use (16,26–29).

However, there are several gaps in the literature on fertility desire among female adolescents in sub-Saharan Africa. First, although family planning communication through media or health facility visit has the power to influence fertility behavior especially among adolescents, there are fewer studies that have focused on the role FP communication plays in influencing adolescents’ ideal family size in SSA. Second, there is missing information on how socio-economic, cultural and demographic factors influence adolescents’ fertility desire at sub-regional levels in SSA. Considering that there is vast heterogeneity in socio-cultural norms and value for children across countries in SSA (30), it is important to study determinants of fertility desire in adolescents to inform appropriate design of regional family planning strategies to reduce fertility in SSA. Furthermore, several studies on adolescents’ fertility desire in SSA have focused on country level analysis. Even though studies on FP and fertility have shown a positive
association in most SSA countries, it remains unclear how family planning communication influence fertility desires among adolescents in SSA. A holistic understanding of how FP communication influences adolescents’ desired family size would produce information relevant to inform fertility policy and FP programming to effectively contribute to fertility decline in the region.

In this study, we used data from nationally representative cross-sectional surveys to have a comprehensive understanding of the extent of the association between exposure to family planning communication and cited ideal family size during adolescence in SSA. The findings could inform strengthening of family planning policy suggestions to further reduce fertility desire among adolescents in SSA. Using multivariate logistic regression models, the study also sought to establish sub-regional and country level heterogeneity in the influence of FP communication and desired family size among adolescents.

Methods

Data source

The study used data extracted from the most recent Demographic and Health Survey (DHS) datasets for 28 countries in sub-Saharan Africa conducted between 2009 and 2018 (Table 1). The DHS programme draws national representative samples of households which are usually selected via two-stage stratified cluster sampling technique (31). Women aged 15-49 and 15-59 are selected for interviews. The interviews are conducted using three main questionnaires namely; household questionnaire, woman questionnaire and men questionnaire. Participants in the DHS survey were interviewed by field workers who were well-versed in a wide range of sexuality and family planning and reproductive health topics. DHS data are typically weighted to account for the complexity of survey design and response bias, with the goal of ensuring that the sample is truly representative of the general population (32).

Study sample

The analysis samples for this study comprised female adolescents’ aged 15-19 years extracted from each country’s recent DHS. The data came from the women individual recode files (IR dataset) for each country. The samples included all adolescent who were not declared infecund or sterile. This resulted in a weighted pooled sample of 87,884 adolescents included in the analysis. The samples ranged from 1,505 adolescents’ in South Africa to 8,423 in Nigeria. Adolescents who reported non numeric ideal number of children were excluded from the analysis.

Measures

Outcome variable

The outcome variable of interest in this study is ideal number of children. The DHS program usually collects information on ideal number of children from all interviewed women aged 15-49 years. For our analysis, the outcome variable was classified in two levels; In the first level, the outcome variable was
classified as a discrete distribution to facilitate computation of overall average number of ideal children in SSA and across countries included in the study. In second first level, we classified the outcome as binary, such that threshold of 3 children or less was classified as “0” representing preference for a small family and adolescents who desired more than 3 children were classified as “1” representing desire for a large family size. This choice for the cut-off was informed by existing literature on determination of low or high fertility (33–35).

**Independent variables**

Based on literature review, we identified individual and household level predictors that could potentially be associated with fertility desire of adolescents in SSA. These variables are classified as socio-economic and demographic factors. DHS reference materials and data collection forms were used to identify the independent variables of interest presented here. The main predictor variable for this study was exposure to family planning information. This is a composite variable, constructed by merging 3 related variables (that is, exposure to mass-media FP messages, exposure to FP messages at health facility and exposure to FP messages via visit a community health work). Other control variables included in the study were; age of adolescent categorised as (15, 16, 17, 18 and 19); current marital status (categorised as never married, currently married/living with partner and formally married); residence (urban; rural); education (no education, primary, secondary, tertiary); Household wealth index (categorised as poor, middle, rich); religion (catholic, protestant, Muslim, other); employment status (categorised as employed, unemployed) and contraceptive use (not using a method, using a method) and visited health facility in the last 12 months (yes, no).

**Statistical analysis**

Statistical software Stata SE version 16.0 was used to perform complex survey analysis by taking into account sample weight. Descriptive analysis was performed to summarize study samples for each country included in the study. Categorical variables were presented using frequencies and percentages while means were computed for continuous data. Cross tabulations were conducted to explore bivariate association between exposure to family planning messages and ideal number of children for each country. Furthermore, analysis was conducted to statistically assess mean differences in perceived ideal number of children between adolescents who were exposed to family planning messages and those who were not for each country and for SSA in general. We also conducted multivariate binary logistic regression to examine the determinants of perceived ideal number of children among adolescents in SSA. The choice of this model was informed by the dichotomous distribution of the dependent variable. The multivariate models were fitted in two steps. In the first model (model I) we only included our main explanatory variable (exposure to FP messages). This was followed by model II where all control variables were entered into the model. On the basis of both models, the odds ratio (OR) were calculated and presented along with their respective 95 percent confidence intervals (95 percent CI).
Ethical approval

The datasets used in the analysis for this study are publicly available on DHS program website (https://dhsprogram.com/). Permission to use the dataset was obtained through registration of the study at DHS program. No ethical approval was required since the study used secondary dataset which do not contain any personal identifying information.

Results

Twenty-eight DHS datasets were included in the study. They outline description of the sample information for the study in presented in Table 1 and Figure 1. Findings show that the average desired family size among adolescents in SSA was 4.6 (95% CI: 4.5 - 4.7). The average perceived ideal number of children among adolescents ranged from a low of 2.1 children in both Lesotho and South Africa (95% CI: 2.0 - 2.2) to highs of 9.5 children (95% CI: 8.7-10.4) in Mali and 8.1 (95 CI: 7.9–8.3) in Niger. Furthermore, our study found that, overall, six in every ten adolescents in SSA preferred a large size. Niger and Chad had the highest proportion of adolescents who desired large family sizes (96.0% and 95.6%) respectively, while Lesotho and South Africa had the lowest percentage of adolescents preferring large family sizes 7.5% and 11.1% respectively.

Generally, average ideal number of children among adolescents in SSA is highest in countries from Western Africa. Ghana had the lowest proportion of adolescents who had desire for large family size in the subregion (60%) while Niger had the highest at 96%. Countries from Southern Africa recorded the least average ideal number of children. Lesotho had the lowest percentage of adolescents who had desire for a large family size (7.5%) and Zambia had the highest at 60%.

Table 1: Sample size and descriptive statistics for perceived ideal number of children among adolescents across countries in sub-Saharan Africa
| Country          | DHS year | Sample | Average ideal number of children (95%CI) | Percentage of adolescents who desired 4+ Children |
|------------------|----------|--------|------------------------------------------|-----------------------------------------------|
| Angola           | 2016     | 3,363  | 3.9 (3.8, 4.1)                           | 64.3                                          |
| Benin            | 2018     | 3,335  | 4.6 (4.5, 4.7)                           | 80.1                                          |
| Burkina Faso     | 2010     | 3,349  | 4.6 (4.6, 4.7)                           | 78.9                                          |
| Burundi          | 2017     | 3,968  | 3.7 (3.7, 3.8)                           | 50.4                                          |
| Cameroon         | 2018     | 2,676  | 4.9 (4.7, 5.0)                           | 75.4                                          |
| Chad             | 2015     | 3,705  | 7.2 (7.1, 7.4)                           | 95.6                                          |
| Congo DR         | 2014     | 3,981  | 5.3 (5.1, 5.5)                           | 80.3                                          |
| Cote d'Ivoire    | 2012     | 1,997  | 4.5 (4.4, 4.7)                           | 77.9                                          |
| Ethiopia         | 2016     | 3,498  | 3.6 (3.4, 3.8)                           | 57.2                                          |
| Ghana            | 2014     | 1,756  | 3.9 (3.8, 4.0)                           | 60.1                                          |
| Guinea           | 2018     | 2,561  | 5.0 (4.9, 5.1)                           | 84.6                                          |
| Kenya            | 2014     | 2,862  | 3.2 (3.1, 3.2)                           | 34.8                                          |
| Lesotho          | 2014     | 1,542  | 2.1 (2.0, 2.2)                           | 7.5                                           |
| Liberia          | 2013     | 1,915  | 4.0 (3.8, 4.1)                           | 63.0                                          |
| Madagascar       | 2009     | 4,034  | 4.1 (3.9, 4.2)                           | 59.1                                          |
| Malawi           | 2016     | 5,273  | 3.0 (2.9, 3.0)                           | 34.9                                          |
| Mali             | 2018     | 2,209  | 9.5 (8.7, 10.4)                          | 90.1                                          |
| Mozambique       | 2015     | 3,065  | 3.8 (3.4, 3.9)                           | 56.3                                          |
| Namibia          | 2013     | 1,857  | 2.4 (2.4, 2.5)                           | 18.8                                          |
| Niger            | 2012     | 1,901  | 8.1 (7.9, 8.3)                           | 96.0                                          |
| Nigeria          | 2018     | 8,423  | 6.8 (6.4, 7.3)                           | 84.3                                          |
| Rwanda           | 2015     | 2,779  | 3.0 (2.9, 3.0)                           | 23.8                                          |
| Senegal          | 2019     | 3,920  | 4.9 (4.8, 5.1)                           | 30.0                                          |
| South Africa     | 2016     | 1,505  | 2.1 (2.0, 2.2)                           | 11.1                                          |
| Tanzania         | 2016     | 2,932  | 4.1 (4.0, 4.2)                           | 60.1                                          |
| Uganda           | 2016     | 4,276  | 4.1 (4.0, 4.2)                           | 75.0                                          |
| Zambia           | 2018     | 3,112  | 3.7 (3.6, 3.8)                           | 60.2                                          |
| Zimbabwe         | 2015     | 2,156  | 3.3 (3.2, 3.4)                           | 41.7                                          |
Results shows that the overall mean ideal family size among adolescents who had exposure to family planning communication in SSA is significantly lower than the mean of those who had no exposure to FP communication (3.8 children compared to 4.5 children; \( p<0.001 \)). Generally, in most countries included in this study the desired mean ideal number of children among adolescents who had exposure to family planning messages were significantly lower compared to those who had no exposure except for Guinea, Lesotho, Namibia and Zambia. Low ideal family sizes among adolescents with exposure to FP communication were observed in Southern and East Africa countries (Lesotho, South Africa, Namibia and Kenya) while higher average ideal family sizes were observed in West African countries (Niger, Chad, Guinea and Mali). (Table 2).
### Table 2: Distribution of average ideal number of children by exposure to family planning messages among adolescents

| Country      | Had exposure to FP messages | Had no exposure to FP Messages | p-value |
|--------------|----------------------------|-------------------------------|---------|
| Angola       | 3.6                        | 4.0                           | 0.000   |
| Benin        | 4.1                        | 4.8                           | 0.000   |
| Burkina Faso | 4.2                        | 4.9                           | 0.000   |
| Burundi      | 3.5                        | 3.8                           | 0.000   |
| Cameroon     | 4.4                        | 5.1                           | 0.000   |
| Chad         | 6.2                        | 7.4                           | 0.000   |
| Congo DR     | 4.7                        | 5.4                           | 0.000   |
| Cote d’Ivoire| 4.1                        | 4.7                           | 0.000   |
| Ethiopia     | 3.3                        | 3.7                           | 0.000   |
| Ghana        | 3.6                        | 4.1                           | 0.000   |
| Guinea       | 5.2                        | 5.0                           | 0.096   |
| Kenya        | 2.9                        | 3.4                           | 0.000   |
| Lesotho      | 2.2                        | 2.1                           | 0.135   |
| Liberia      | 3.7                        | 4.1                           | 0.000   |
| Madagascar   | 3.4                        | 4.2                           | 0.000   |
| Malawi       | 2.9                        | 3.0                           | 0.021   |
| Mali         | 5.2                        | 5.6                           | 0.006   |
| Mozambique   | 3.4                        | 3.9                           | 0.000   |
| Namibia      | 2.4                        | 2.5                           | 0.375   |
| Niger        | 6.7                        | 8.4                           | 0.000   |
| Nigeria      | 4.8                        | 5.6                           | 0.000   |
| Rwanda       | 2.8                        | 3.0                           | 0.005   |
| Senegal      | 4.2                        | 5.2                           | 0.000   |
| South Africa | 2.2                        | 1.9                           | 0.000   |
| Tanzania     | 3.8                        | 4.4                           | 0.000   |
| Uganda       | 3.9                        | 4.2                           | 0.000   |


|       |       |       |       |
|-------|-------|-------|-------|
| Zambia | 3.8   | 3.7   | 0.139 |
| Zimbabwe | 3.1   | 3.4   | 0.000 |
| Total  | 3.8   | 4.5   | 0.000 |

**Determinants of desired family size among adolescents in SSA**

Multivariate logistic regression was used to examine the influence of explanatory variables on perceived ideal family size among adolescents in sub-Saharan Africa. Results for model I show that exposure to family planning messages reduces desire for large family size by 42% in adolescence. In the full model, all independent variables used in the study, that is age, residence, marital status, wealth status, education level, employment status, contraceptive use, visiting health facility in the last 12 months and exposure to FP messages were significantly associated with adolescents’ desired family size. Results show that older adolescents and those in marital union were highly likely to desire a large family. Adolescents who lived in rural areas of SSA were 18% less likely to desire large family size compared to their counterparts living in urban areas. Results show that education and household wealth status were negatively associated with desired family size. An increase in education level and household wealth status was associated with reduced odds of desire for large family size (0.23 95% CI: 0.17 - 0.30) for adolescents with higher level of education and (0.68 95% CI: 0.62 - 0.75) for adolescents with who belonged to rich households. Furthermore, use of contraception and visiting the health facility in the last 12 months were positively associated with reduced odds of desire for large family size as twenty-nine of adolescents who were using contraception and 14% who visited a health facility were less likely to desire a large family size.
Table 3: Results of multivariate analyses examining the effect of individual level factors on desired family size among adolescents in sub-Saharan Africa

| Background Characteristics | Model I | Model II |
|----------------------------|---------|----------|
| OR                         | 95% Confidence Internal | AOR | 95% Confidence Internal |

**Exposure to FP messages**

| No | 1 | 1 |
|---|---|---|
| Yes | 0.58*** (0.55 - 0.61) | 0.83*** (0.78 - 0.88) |

**Age**

| Age | OR | 95% Confidence |
|-----|----|----------------|
| 15  | 1  |                |
| 16  | 1.06 (0.99 - 1.13) |
| 17  | 1.09* (1.02 - 1.16) |
| 18  | 1.06 (0.99 - 1.14) |
| 19  | 1.02 (0.94 - 1.10) |

**Residence**

| Urban | 1 |
|-------|---|
| Rural | 0.82*** (0.76 - 0.89) |

**Marital status**

| Never married | 1 |
|---------------|---|
| Married       | 1.94*** (1.81 - 2.08) |
| Formerly married | 1.14 (0.97 - 1.33) |

**Working status**

| No | 1 |
|---|---|
| Yes | 1.21*** (1.14 - 1.27) |

**Wealth status**

| Poor | 1 |
|------|---|
| Middle | 0.93* (0.87 - 0.99) |
| Rich | 0.68*** (0.63 - 0.73) |

**Education level**

| None | 1 |
|------|---|
Discussion

The study focused on examining the influence of exposure to family planning messages on desired family size among adolescents in SSA. Study also examined sub-regional variations in factors influencing desire for family size among adolescents. Our review of the literature reveals that there has been no known comprehensive study of this nature conducted before in sub-Saharan Africa and thus bolstering the importance of our findings. We focused on understanding adolescents’ ideal number of children because future fertility of a country is highly likely to be influenced by present adolescents’ reproductive behavior. Since family planning services are mostly offered during antenatal and under five clinics, adolescents may prefer getting family planning information via mass-media channels. Our study revealed that exposure to family planning messages was significantly associated with adolescents’ desire for family size in sub-Saharan Africa. Other variables found to be important included age, marital status, household wealth status, education level, contraceptive use and visiting health facility in the last 12 months prior to data collection.

Study findings revealed that adolescents who had exposure to family planning messages were 17% less likely to desire a large family size comparable to those who had no exposure. This is can be attributed to the appreciation of benefits of family planning education gained by adolescents through mass-media, visit to health facility and community visits by community health workers. Family planning messages are usually targeted at influencing individuals’ reproductive behavior towards contraception, limiting of births, spacing of children and choice of small family. This finding implied a significant contribution of family planning education interventions to social and reproductive behavior change among adolescents in SSA. Similar results were reported in a study conducted in Rwanda in 2016 (37) where reduction in fertility desire among women of reproductive age was attributed to massive family planning education through mass-media and community-led sensitization programmes.
The study found that adolescents who were married or living with a partner were twice as likely to prefer a large family size compared to the never married. In most African culture, women may be expected to start having children soon after marrying, causing partnered women to stop using contraception (38). Such practices could explain why teenage pregnancy and early motherhood are high in sub-Saharan Africa. There may also be sub-regional disparities in the norms surround timing of having a child after marriage. This result implies the urgent need for community led family planning education programmes aimed at influencing reproductive behavior change of married adolescents, especially those coming from rural settings.

Earlier studies have shown that education and wealth status are strongly associated with fertility desire (9,39,40) such that individuals with higher level of education and those from higher wealth groups have a tendency to desire low family size. This is because this demographic has adequate information about benefits that accrue with smaller family sizes. Our study confirms the findings presented by earlier studies. We established that adolescents with secondary and higher-level education were 70% and 7% less likely to desire a large family size, respectively. These findings are consistent with similar studies conducted in Zambia, Rwanda, Burkina Faso, Niger, Mali and Egypt that reported education and wealth status as significant predictors of ideal number of children (23,27,39,41). This implies that education is an important component for reducing fertility in SSA. Therefore, education policies should propagate the implementation of strategies that improve education access to girls and young women, especially those in marginalized communities.

Another notable finding from this study was the effect of contraceptive use on desired family size. Contraception in adolescence was associated with a low chance of desiring large family sizes. Twenty-nine percent of adolescents who used any form of contraception preferred a small family size. This finding signifies the importance of family planning programmes in sub-Saharan Africa’s agenda to reduce population growth rate through fertility reduction. Many studies conducted in SSA (17,39,40,42) have found that contraception enables women in the reproductive age to make an informed decision about planning their births and decide their desirable number of children. Such decisions have far-important health benefits for couples and their households at large.

Access to family planning communication is another issue that needs to be addressed in most countries in SSA. Places such as schools, community youth friendly corners, private pharmacies/drug stores and traditional ceremonies can also serve as distribution points for family planning information to adolescents. The merits of disseminating family planning information in schools through introduction of comprehensive sexually education need to be explored further. Improving the demand for family planning information among adolescents should be stressed in the country’s population policies as key priority strategy to reduce fertility further. Increasing access to family planning information is essential and has been shown to have a significant impact on decision making to use contraception, postponing of marriage and limiting the number of children, thus reducing fertility (43,44). Health education on limiting family size through family planning programming will surely assist in changing reproductive behavior of
adolescents, but it will only be effective if adolescents will embrace the advantages of having smaller families.

Although the study has provided useful findings to inform strengthening of family planning education programmes targeting at changing adolescents reproductive behaviour. There are a few limitations that could make the conclusions from the study to be interpreted with caution. First, because our data is cross-sectional, we cannot conduct causality analyses, which limits our ability to understand the complexities of adolescents' experiences regarding their desire for children through their life cycle. As a result, our findings highlight the need for additional research, particularly qualitative and longitudinal research, to further our understanding of the complex interplay between the various individual and community factors that shape adolescents' reproductive behavior and desire for children, as well as how these factors change over the course of their lives. Finally, because of the lack of other country level data on the DHS program website, the study did not contain data for all countries in SSA. As a result, the conclusions should not be extrapolated beyond the sub-sample of nations included in our analysis.

**Conclusion**

This study has shown that family exposure to family planning messages has the potential to influence adolescents’ future reproductive behavior in SSA. Although desire for large family size in adolescence is high SSA, Western and Central African countries had the highest percentages of adolescents desiring large family size. This suggests that high fertility remains a social concern in the region. Furthermore, the major factors associated with preferred ideal number of children among adolescent in SSA include; marital status, wealth status, education level, contraceptive use, visit to health facility in last 12 months and exposure to family planning messages. There is a need for governments and stakeholders especially in Central and West African countries to prioritise strengthening of family planning communication programmes that provides education on benefits of smaller family sizes, targeting mostly in and out-of-school adolescents in order to reduce fertility further in the regions. It is important to incorporate sexual reproductive health education into early primary and secondary level curriculum to maximize benefits of family planning programmes. Further research is needed to examine how exposure to family planning messages operates through community level factors to influence desired family size among adolescents across different countries in SSA.

**Abbreviations**

CI Confidence Interval

CPR Contraceptive prevalence rate

DHS Demographic and Health Survey

EA Enumeration Area
Declarations

Ethical approval and consent to participate

The study utilized secondary data extracted from recent country DHS datasets for 28 countries in sub-Saharan Africa. The DHS program allowed for permission to use survey datasets. The datasets have no personal identities for research participants. All DHS studies were approved by the respective country ethical review boards and the Centers for Disease Control and Prevention (CDC) Atlanta. The surveys data collection procedures required consent from participants aged 18 and older. The survey protocol also required authorization from parents/guardians for all participants aged 15-17 years before seeking consent from teenagers.

Consent for publication

Not applicable

Availability of data and materials

Data used in our study is publicly available upon request from DHS program website. (https://dhsprogram.com/).

Competing Interests

Authors declare no competing interest.

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Author contributions
MP developed the concept for this study, performed data analysis and wrote data interpretation text for the analysis and wrote discussion section. ML prepared the methodology. MS and SS prepared the background and conclusion section. MP and SS performed overall review and editing of the manuscript for intellectual content. All authors have read and approved the final version of this manuscript.

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Figures

![Figure 1](image)

**Figure 1**

Description of Adolescents by exposure to FP messages and ideal family size