

ORIGINAL RESEARCH ARTICLE

Unmet need for modern contraception among adolescent girls and young women in sub-Saharan African Countries

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Abstract

In sub-Saharan Africa (SSA), adolescent girls and young women (AGYW) encounter numerous obstacles related to sexual and reproductive health and rights (SRHR), one of which is the unfulfilled need for contemporary contraception. Unwanted pregnancies, unsafe abortions, and high fertility rates are still common among this population group despite global efforts to increase access to family planning, which has a negative impact on the health of both mothers and children. Utilizing data from the most recent Demographic and Health Surveys (DHS) carried out in 26 countries throughout the region, this study analysed a weighted sample of 85,648 AGYWs aged 15–24 to investigate the determinants of unmet need for contraceptives among in SSA. The study utilized binary logistic regression to investigate determinants of unmet need. The pooled prevalence of unmet need for modern contraception was 27.0%. The results show that unmet need for contraception was significantly associated with several determinants. Being highly educated (AOR=1.69, 95% CI: 1.46–1.97, $p<0.001$), residing in one place for 15–19 years (AOR=1.59, 1.37–1.77, $p<0.001$) were associated with higher odds of unmet need for contraceptives. However, being aged 15–19 (AOR=0.89, 95% CI: 0.85–0.93, $p<0.001$), history of pregnancy termination (AOR=0.73, 95% CI: 0.68–0.80, $p<0.001$), using calendar-based contraceptives (AOR=0.16, 95% CI: 0.15–0.17, $p<0.001$) living in rural (AOR=0.80, 95% CI: 0.76–0.85, $p<0.001$) were associated will lower odds of unmet need for contraceptives. In conclusion, this study provides critical insights into the determinants of unmet contraceptive needs among AGYW in SSA, highlighting the influence of education, residential stability, age, reproductive history, contraceptive method choice, and geographic location. (*Afr J Reprod Health* 2025; 29 [12]: 159-173)

Keywords: Unmet Need, Modern Contraception, Adolescent Girls, Young Women, Sub-Saharan African Countries

Résumé

En Afrique subsaharienne, les adolescentes et les jeunes femmes (AJF) rencontrent de nombreux obstacles liés à la santé et aux droits sexuels et reproductifs (SDSR), notamment un besoin non satisfait de contraception moderne. Les grossesses non désirées, les avortements non médicalisés et les taux de fécondité élevés restent fréquents au sein de cette population, malgré les efforts déployés à l'échelle mondiale pour améliorer l'accès à la planification familiale, ce qui a un impact négatif sur la santé des mères et des enfants. À partir des données des dernières Enquêtes démographiques et de santé (EDS) menées dans 26 pays de la région, cette étude a analysé un échantillon pondéré de 85 648 AJF âgées de 15 à 24 ans afin d'identifier les facteurs déterminants du besoin non satisfait de contraception en Afrique subsaharienne. L'étude a utilisé une régression logistique binaire pour analyser ces facteurs. La prévalence globale du besoin non satisfait de contraception moderne était de 27,0 %. Les résultats montrent que ce besoin non satisfait était significativement associé à plusieurs facteurs déterminants. Être très instruit (AOR=1,69, IC à 95 % : 1,46–1,97, $p<0,001$), résider au même endroit pendant 15 à 19 ans (AOR=1,59, 1,37–1,77, $p<0,001$) étaient associés à des chances plus élevées de besoins non satisfaits en matière de contraceptifs. Cependant, l'âge (15-19 ans) (AOR = 0,89, IC à 95 % : 0,85-0,93, $p < 0,001$), les antécédents d'interruption de grossesse (AOR = 0,73, IC à 95 % : 0,68-0,80, $p < 0,001$), l'utilisation d'une contraception calendaire (AOR = 0,16, IC à 95 % : 0,15-0,17, $p < 0,001$) et le fait de vivre en milieu rural (AOR = 0,80, IC à 95 % : 0,76-0,85, $p < 0,001$) étaient associés à une probabilité plus faible de besoins non satisfaits en matière de contraception. En conclusion, cette étude apporte des informations essentielles sur les déterminants des besoins non satisfaits en matière de contraception chez les jeunes femmes et adolescentes en Afrique subsaharienne, en soulignant l'influence du niveau d'instruction, de la stabilité résidentielle, de l'âge, des antécédents reproductifs, du choix de la méthode contraceptive et de la situation géographique. (*Afr J Reprod Health* 2025; 29 [12]: 159-173).

Mots-clés: Besoins non satisfaits, contraception moderne, adolescentes, jeunes femmes, pays d'Afrique subsaharienne

Introduction

Adolescent girls and young women (AGYW), defined as those between the ages of 10 and 24, make up over 880 million of the global youth, with a large proportion living in sub-Saharan Africa (SSA).¹ The WHO defines "young people" as those between the ages of 10 and 24 and "adolescents" as those between the ages of 10 and 19.² The sexual and reproductive health and rights (SRHR) of the youth is a recurrent challenge in SSA, which is home to some of the youngest populations in the world.^{3,4}

Globally, the young population has been steadily increasing, with about 1.3 billion individuals aged 15–24, of whom 89% live in developing countries, including SSA.^{5,6} Improved contraceptive use in these regions has contributed to a reduction of 40% in maternal deaths over two decades by reducing unintended pregnancies.⁷ Additionally, modern contraceptives have reduced the maternal mortality ratio by 26% in just over a decade, with significant benefits for women's overall health, improved pregnancy spacing, better perinatal outcomes, and enhanced child survival.⁷

Despite these improvements, many African nations continue to have high fertility rates because of child marriage, early sexual activity, and unmet contraceptive needs.^{8,9,10} Sexually active, able-to-conceive women who do not use any form of contraception are considered to have unmet contraceptive needs.¹¹ Worldwide, 55% of unwanted pregnancies among 15–19-year-olds end in abortion¹². Over 97% of unsafe abortions take place in developing nations, disproportionately affecting AGYW.^{3,14} These unmet needs are exacerbated by cultural stigmas, especially for unmarried girls, a lack of information about reproductive health, and difficulties negotiating the use of contraception due to power imbalances.^{15,16}

Despite regional and international efforts to improve access to contraception and lower maternal and infant mortality, a significant number of SSA's AGYW are still at risk for unwanted pregnancies and unsafe abortions because contraceptives are not readily available or easily accessible, especially in settings with limited resources.¹⁷⁻¹⁹ Unmet contraceptive needs affect 9% of the 1.9 billion

women of reproductive age (15–49 years) worldwide in 2023, with 270 million of them unable to obtain contemporary family planning techniques.²⁰ It is projected that by 2030,^{21,22} this unmet requirement will increase by 10%. Modern contraception is unavailable to 24% of women of reproductive age who want to prevent getting pregnant in low-income countries, with the majority living in SSA.²³

This leads to high numbers of unwanted pregnancies, which in turn cause economic challenges, school dropouts, and a poverty cycle. Negative pregnancy outcomes, such as increased rates of miscarriage, difficult deliveries, and poor neonatal health, are more common in areas like SSA where access to healthcare services is limited.²⁴

Improving public health outcomes and accomplishing the Sustainable Development Goals (SDGs) pertaining to gender equality, education, and health depend on addressing the unmet need for contraception among young women and adolescents. Age, marital status, wealth index, place of residence, employment status, parity, and exposure to FP information are important factors that impact unmet FP demands; rural and marginalized women have particular difficulties.^{25,26} Nonetheless, there is still a dearth of research that focuses only on the obstacles and enablers for AGYW. In order to guide focused treatments that enable AGYW in SSA to make knowledgeable decisions about their reproductive health, this study aims to determine the factors driving unmet contraceptive requirements.

Methods

The study used a cross-sectional design to examine unmet needs for modern contraception among adolescent girls and young women (AGYW) aged 15–24 across 26 sub-Saharan African countries.

Data source

In this study, 26 sub-Saharan African (SSA) nations—including Angola, Burkina Faso, Benin, Burundi, Côte d'Ivoire, Cameroon, Ethiopia, Gabon, Ghana, Gambia, Guinea, Kenya, Liberia, Madagascar, Mali, Mauritania, Malawi,

Mozambique, Nigeria, Rwanda, Sierra Leone, Tanzania, Uganda, Zambia, and Zimbabwe—provided data from the most recent Demographic and Health Surveys (DHS). The data from the Demographic and Health Surveys (DHS) were chosen for this analysis because of their broad breadth, standardized procedures, and national representativeness, all of which guarantee consistent and trustworthy comparisons among the 26 sub-Saharan African nations that were included. By providing comprehensive data at the individual, household, and community levels, the DHS makes it possible to analyze the variables affecting unmet contraceptive requirements. A reliable and affordable resource for analyzing important health indicators at scale, the data were timely, ethically authorized, publicly available, and were in line with global reproductive health priorities.

Sampling

DHS surveys used a two-stage stratified cluster sampling design, which involves first choosing enumeration areas (EAs) from both urban and rural strata, and then choosing households within each EA. These procedures guarantee reliable and representative data collection, and the protocols were examined and approved by the Health Research Ethics Board of the respective host country as well as the ICF Institutional Review Board, which guarantees adherence to ethical standards, such as confidentiality, privacy, and data protection. This study exclusively used data from 2015 onwards, using datasets gathered from 26 SSA nations. In order to assure that no identifying respondent information may be traced, the DHS Program provided ethical permission for the use of secondary data. The final report from the DHS for each nation contains comprehensive sampling techniques and processes. Upon requested, the datasets were publicly available at <https://dhsprogram.com>.

Measurement of variables

The outcome variable in this study is a dichotomous measure of unmet need for contraception (yes/no), derived from a constructed variable in the

Demographic and Health Surveys (DHS). It encompasses the total unmet need for both spacing and limiting births. AGYW who were married, fecund, or sexually active were classified as having an unmet need if they did not wish to have more children or wanted to delay their next birth by at least two years, yet were not using any form of contraception. Additionally, pregnant or amenorrheic young women whose current pregnancies or recent births were unwanted or mistimed were considered to have had an unmet need if they were not using contraception at the time of conception.

This study's variables were grouped according to their contextual importance and the goals of the investigation. The unmet need for contraception (v626a), which was divided into "no unmet need" and "unmet need," was the main outcome variable. Adolescent girls and young women were represented by the two age (v012) groups of 15–19 and 20–24 years. The respondents' formal educational attainment was captured by the education level (v106), which was separated into "no education," "primary," "secondary," and "higher." Literacy (v155) evaluated reading proficiency using categories such as "blind/visually impaired," "no card with required language," and "cannot read at all" to "able to read the entire sentence." Employment status was measured by whether the respondent was currently working (v714) as a binary variable (yes/no). Wealth was examined through both an individual wealth index (v190) and a community-level wealth index (v190a), each categorized into quintiles: "poorest," "poorer," "middle," "richer," and "richest." Pregnancy termination experience (v228) was included as a binary variable (yes/no), while knowledge of any contraceptive method (v301) was divided into "knows no method," "knows only folkloric methods," "knows only traditional methods," and "knows modern methods." Additionally, past contraceptive use (v302a) was captured with options such as "no," "used outside calendar," and "used in calendar." The residence type (v025) separated urban and rural environments, while the years spent in the current residence (v104) divided time into intervals ranging from "0–4 years" to "always,"

including a category for "visitors." When taken as a whole, these variables offer insights into contextual, Sexuality, social, and individual aspects that impact unmet needs and the use of contraception.

Analytical steps and methods

To ensure analytical accuracy, data cleaning was essential. Individuals over 24 years old and those with missing data in important variables like wealth index (v190), respondent currently employed (v714), and knowledge of any method (v301) were not included. All variables with fewer than 85,648 observations were eliminated, with the exception of those that were absolutely necessary, such as the unmet need for contraception (v626) and sexuality variable (v536). To ensure its integrity, the dataset was examined for irregularities. The outcome variables (unmet need for contraception) were combined and divided into two categories: unmet need and no unmet need.

A number of statistical techniques were used: The [aw=scaled_weight] Stata command was used to do descriptive analysis, which was documented using frequency and percentages for both weight and unweight results on categorical variables. The Variance Inflation Factor (VIF) analysis in Table 3 shows no significant multicollinearity among the variables, with all VIF values below the threshold of concern. Multicollinearity Assessment using VIF was used to detect multicollinearity. Although literacy (2.1) and education (2.1) have the highest VIFs, the model's dependability for regression analysis is confirmed by the mean VIF of 1.3.

Using UAOR, AOR, 95%CL, and P-value 0.05, Binary Logistic Regression was utilized to investigate correlations between predictor factors and unmet contraceptive needs. Because the main goal of this study was to identify factors influencing unmet need rather than analyze hierarchical data, binary logistic regression was a more suitable method. Binary logistic regression enables a thorough analysis of these relationships while accounting for contextual variables, even though multilevel models are usually employed for nested data. A key component of the study's goals, this method also yields results on the likelihood of

addressing the unmet need for contraception that are easy to understand. To make sure the sample was representative, data weighting was done using Stata MP version 14.2's svy command.

Post-estimation diagnostics assessed the model's performance in terms of classification accuracy; the model showed an acceptable rate of 74.44% overall classification accuracy. The sensitivity of the Hosmer-Lemeshow test with big datasets, which can detect small deviations, is probably the reason for this finding even if the test was significant ($p < 0.001$). An adequate level of discriminating between individuals with unmet and met contraceptive needs was indicated by the ROC curve's Area Under the Curve (AUC) of 0.73. In light of these results, the study recommended that metrics such as the ROC curve and classification accuracy be used instead of the Hosmer-Lemeshow test to assess model performance, arguing that these metrics were a more useful and precise indicator of model reliability.

Results

In this study, the pooled prevalence of unmet need for AGYW was estimated at 27.0% (95% CI: 26.5–27.5). However, significant variations were observed across the SSA countries. Angola reported the highest prevalence at 44.1% (95% CI: 41.7–46.5), while Zimbabwe had the lowest at 13.5% (95% CI: 11.8–15.4) as illustrated in Figure 1. Table 1

The study analyzed the demographic and reproductive health characteristics of adolescent girls and young women (AGYW) aged 15–24 across sub-Saharan Africa using both unweighted and weighted samples to ensure representativeness. In both datasets, the prevalence of unmet need for contraception remained consistent at 27%, indicating the robustness of the estimates irrespective of sampling weights. Regarding age, the majority of respondents fell within the 20–24 age group—comprising 64.4% in the unweighted data and 63.3% in the weighted data—while adolescents aged 15–19 constituted 35.6% and 36.7%, respectively. Educational attainment revealed that less than half of the respondents completed secondary education (41.4% unweighted; 40.9%

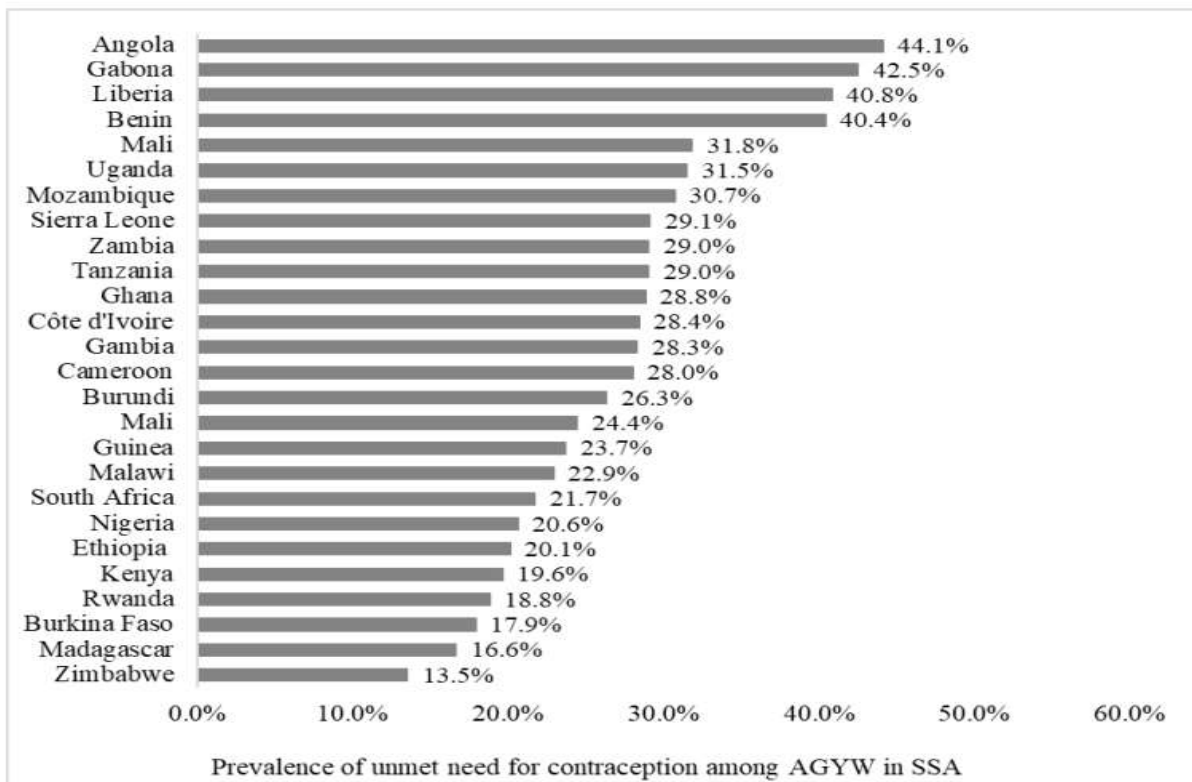


Figure 1: Distribution of unmet need for family planning among adolescent girls and young women (aged 15–24 years) across selected Sub-Saharan African countries

Table 1: Characteristics of study participants: Unmet need for modern contraceptives among adolescent girls and young women in sub-Saharan African Countries

DHS CODE	VARIABLE	UNWEIGHT RESULT		WEIGHT RESULT	
		Frequency	Percentage	Frequency	Percentage
v626a	Unmet need for contraception				
	No unmet need	58,186	72.7	58,435	73.0
	Unmet need	21,869	27.3	21,620	27.0
v012	Age:				
	15-19	30,685	35.8	30,116	35.2
	20-24	54,963	64.2	55,532	64.8
v106	Education level				
	No education	19,930	23.3	19,212	22.4
	Primary	28,666	33.5	28,438	33.2
	Secondary	33,963	39.7	34,338	40.1
	Higher	3,089	3.6	3,660	4.3
v155	Literacy				
	Cannot read at all	31,733	37.1	30,994	36.2
	Able to read only parts of sentence	11,159	13.0	10,748	12.6
	Able to read whole sentence	42,491	49.6	43,704	51.0
	No card with required language	228	0.3	168	0.2
	Blind/visually impaired	37	0.04	34	0.04

v714	Respondent currently working				
	No	45,332	52.9	44,947	52.5
	Yes	40,316	47.1	40,701	47.5
v190	Wealth index:				
	Poorest	19,407	22.7	17,236	20.1
	Poorer	18,473	21.6	18,331	21.4
	Middle	17,657	20.6	17,443	20.4
	Richer	16,613	19.4	17,669	20.6
	Richest	13,498	15.8	14,970	17.5
v228	Ever had a terminated pregnancy	78,284	91.4	78,213	91.3
	No	7,364	8.6	7,435	8.7
	Yes				
v301	Knowledge of any method				
	Knows no method	3,861	4.5	3,312	3.9
	Knows only folkloric method	35	0.0	43	0.1
	Knows only traditional method	158	0.2	158	0.2
	Knows modern method	81,594	95.3	82,135	95.9
v302a	Ever used anything or tried to delay or avoid getting pregnant				
	No	43,907	51.3	42,797	50.0
	Yes, used outside calendar	4,558	5.3	4,687	5.5
	Yes, used in calendar	37,183	43.4	38,164	44.6
v025	Type of place of residence				
	Urban	30,192	35.3	31,338	36.6
	Rural	55,456	64.8	54,310	63.4
v190a	Community wealth index:				
	Poorest	20,177	23.6	17,553	20.5
	Poorer	18,776	22.0	18,784	21.9
	Middle	17,173	20.1	18,158	21.2
	Richer	15,665	18.3	16,621	19.4
	Richest	13,857	16.2	14,531	17.0
v104	Years lived in place of residence				
	0-4	24,632	28.8	25,312	29.6
	5-9	8,191	9.6	8,466	9.9
	10-14	2,684	3.1	2,794	3.3
	15-19	1,642	1.9	1,753	2.1
	20-24	967	1.1	1,012	1.2
	Always	46,648	54.5	45,434	53.1
	Visitor	884	1.0	878	1.02
v000	Region				
	West Africa	35,071	41.0	34,520	40.6
	Central Africa	4,754	5.6	4,593	5.4
	East Africa	19,006	22.2	19,064	22.4
	Southern Africa	26,817	31.3	26,839	31.6
v536	Recent sexual activity				
	Never had sex	347	0.43	308	0.39
	Active in last 4 weeks	52,398	65.47	52,790	66.52
	Not active in last 4 weeks – postpartum	11,522	14.40	10,800	13.61
	Not active in last 4 weeks - not postpa	15,768	19.70	15,459	19.48

weighted), and a notable proportion had no education (23.7% unweighted; 26.5% weighted), reflecting disparities in access to education. Similarly, literacy levels were low, with 36.6% (unweighted) and 37.5% (weighted) unable to read at all, and only about 54.5% and 52.6%, respectively, reported being fully literate.

In terms of economic status, the wealth index showed a fairly even distribution across quintiles, although the weighted data slightly favored the middle and richer groups. Employment status indicated that nearly half of the AGYW were currently working (47.1% unweighted; 48.0% weighted), and the remainder were not engaged in any form of paid work. With respect to pregnancy history, the vast majority (91.5% unweighted; 91.4% weighted) had never had a terminated pregnancy. Although awareness of modern contraception was high—96.2% (unweighted) and 95.1% (weighted)—only about 44–45% had ever used any method within the past calendar year, highlighting a gap between knowledge and practice.

Residence characteristics indicated a predominantly rural population (64.5% unweighted; 63.2% weighted), and community wealth followed a similar distribution to individual wealth, with more respondents residing in middle-income communities in the weighted data. In terms of residential stability, approximately 70% of AGYW had always lived in their current location, suggesting low migration among this population group. Regionally, the majority of respondents were from West Africa (41.6% unweighted; 40.7% weighted), followed by Southern Africa (28.4% unweighted; 29.5% weighted) and East Africa (20.4% unweighted; 20.6% weighted), with Central Africa contributing the smallest share. Finally, sexual activity patterns showed that nearly two-thirds of the respondents (65.2% unweighted; 64.6% weighted) were recently sexually active, with a smaller percentage either postpartum or not sexually active in the recent past. Overall, the consistency between the unweighted and weighted findings reinforces the generalizability and validity of the results, underscoring the widespread reproductive health challenges faced by AGYW in sub-Saharan Africa. Table 2

The table shows the p-values, 95% CI, and unadjusted odds ratios (UOR) for the several factors affecting the unmet demand for contemporary contraception among young women and teenage girls. The analysis reveals that younger women aged 20–24 had significantly lower odds of unmet need compared to those aged 15–19 years (UOR: 0.7, 95% CI: 0.7–0.8, $p = 0.001$). Education level showed a mixed association: those with primary and secondary education were more likely to report unmet need (UORs: 1.3 each), while those with higher education showed no significant difference compared to women with no education (UOR: 0.9, 95% CI: 0.8–1.1, $p = 0.320$). Regarding literacy, women who could read part or all of a sentence had slightly higher odds of unmet need (UOR: 1.1 and 1.0, respectively), but only those who could read part of a sentence had a statistically significant association ($p = 0.001$). Women who were currently working had a lower likelihood of unmet need compared to non-working women (UOR: 0.9, 95% CI: 0.8–0.9, $p = 0.001$).

The wealth index showed no significant gradient, as none of the higher quintiles (from poorer to richest) differed significantly from the poorest group in odds of unmet need. Women who had ever experienced a terminated pregnancy were significantly less likely to report unmet need (UOR: 0.7, 95% CI: 0.7–0.8, $p = 0.001$). Surprisingly, knowledge of modern methods did not significantly reduce unmet need (UOR: 0.9, 95% CI: 0.9–1.0, $p = 0.169$), and prior use of a method showed an inconsistent pattern, with those using outside the calendar method showing a slightly increased odds (UOR: 1.1, $p = 0.352$), while those using within the calendar method had significantly lower odds (UOR: 0.2, $p = 0.001$).

Urban residence was associated with lower odds of unmet need compared to rural residence (UOR: 0.8, 95% CI: 0.8–0.9, $p = 0.001$). Community wealth index showed borderline significance for the “poorer” and “richest” groups (UOR: 0.9 each, $p = 0.053$ and 0.055 respectively), suggesting minimal community-level wealth influence. Duration of residence showed that those who had lived in the area for 5–24 years had significantly higher odds of

Table 2: Unadjusted odds ratio of unmet need for modern contraceptives among adolescent girls and young women in sub-Saharan African Countries

VARIABLES	UOR	(95% CI)	P-VALUE
Age			
15-19	Ref	Ref	
20-24	0.7	0.7-0.8	0.001
Education level			
No education	Ref	Ref	
Primary	1.3	1.2-1.4	0.001
Secondary	1.3	1.2-1.3	0.001
Higher	0.9	0.8-1.1	0.320
Literacy			
Cannot read at all	Ref	Ref	
Able to read only parts of sentence	1.1	1.0-1.2	0.001
Able to read whole sentence	1.0	0.1-1.0	0.519
No card with required language	1.0	0.7-1.5	0.974
Blind/visually impaired	1.6	0.8-3.4	0.204
Respondent currently working			
No	Ref	Ref	
Yes	0.9	0.8-0.9	0.001
Wealth index:			
Poorest	Ref	Ref	
Poorer	1.0	0.1-1.1	0.716
Middle	1.1	0.1-1.1	0.137
Richer	1.0	0.1-1.1	0.430
Richest	1.0	0.9-0.0	0.147
Ever had a terminated pregnancy			
No	Ref	Ref	
Yes	0.7	0.7-0.8	0.001
Knowledge of any method			
Knows no method	Ref	Ref	
Knows only folkloric method	0.7	0.3-1.9	0.500
Knows only traditional method	1.3	0.8-2.1	0.284
Knows modern method	0.9	0.9-1.0	0.169
Ever used anything or tried to delay or avoid getting pregnant			
No	Ref	Ref	
yes, used outside calendar	1.1	0.1-1.2	0.001
yes, used in calendar	0.2	0.2-0.2	0.352
Type of place of residence			
Urban	Ref	Ref	0.001
Rural	0.8	0.8-0.9	
Community wealth index:			
Poorest	Ref	Ref	
Poorer	1.0	0.9-1.0	0.161
Middle	0.9	0.9-1.0	0.053
Richer	1.0	0.9-1.1	0.598
Richest	0.9	0.9-1.0	0.055
Years lived in place of residence			
0-4	Ref	Ref	
5-9	1.2	1.1-1.2	0.001
10-14	1.3	1.2-1.5	0.001
15-19	1.4	1.2-1.6	0.001
20-24	1.1	0.8-1.3	0.687
Always	1.3	1.2-1.3	0.001
Visitor	1.1	0.9-1.3	0.548

Region	Ref	Ref	
West Africa			
Central Africa	1.3	1.2-1.5	0.001
East Africa	0.9	0.8-1.0	0.003
Southern Africa	0.9	0.9-1.0	0.029
Recent sexual activity			
Never had sex	Ref	Ref	
Active in last 4 weeks	0.7	0.5-0.9	0.005
Not active in last 4 weeks – postpartum	1.1	0.8-1.5	0.390
Not active in last 4 weeks - not postpa	0.6	0.5-0.8	0.001

unmet need (UORs: 1.2–1.4, $p = 0.001$), while visitors and those always residing showed no significant difference.

Regionally, women from Central, East, and Southern Africa had mixed associations with unmet need compared to West Africa. Those in Central Africa had significantly higher odds (UOR: 1.3, 95% CI: 1.2–1.5, $p = 0.001$), while women in East and Southern Africa had slightly lower odds (UOR: 0.9, $p = 0.003$ and $p = 0.029$ respectively). Lastly, sexual activity status influenced unmet need. Compared to those who had never had sex, women recently active in the last 4 weeks had significantly lower odds (UOR: 0.7, $p = 0.005$), and those not active but not postpartum had even lower odds (UOR: 0.6, $p = 0.001$), while postpartum non-active women showed no significant difference. Table 3 and 4

The multivariable logistic regression analysis revealed several significant associations between individual and contextual factors and the odds of unmet need for contraception among adolescent girls and young women (AGYW) in Sub-Saharan Africa. AGYW aged 20–24 were significantly less likely to have an unmet need compared to those aged 15–19 (AOR: 0.9, 95% CI: 0.9–0.9, $p < 0.001$). Educational attainment showed a strong protective effect: those with primary (AOR: 1.9, CI: 1.78–2.0), secondary (AOR: 2.1, CI: 1.9–2.3), and higher education (AOR: 1.7, CI: 1.5–1.9) had significantly higher odds of unmet need compared to those with no education ($p < 0.001$ for all). Literacy did not show statistically significant associations, except that those who could read whole sentences had slightly increased odds (AOR: 1.0, CI: 0.9–1.1, $p = 0.504$), while the blind/visually

impaired group showed increased odds (AOR: 1.7, CI: 0.8–3.9), though not statistically significant ($p = 0.194$). Being currently employed was not significantly associated with unmet need (AOR: 1.0, CI: 0.9–1.0, $p = 0.221$). However, women who had ever experienced a terminated pregnancy were significantly less likely to have an unmet need (AOR: 0.8, CI: 0.7–0.8, $p < 0.001$). Prior attempts to delay or avoid pregnancy using methods within the calendar method showed significantly reduced odds (AOR: 0.2, CI: 0.1–0.2, $p < 0.001$), while non-calendar methods were not significant (AOR: 0.9, CI: 0.8–1.0, $p = 0.100$).

Rural residents had lower odds of unmet need compared to urban counterparts (AOR: 0.8, CI: 0.7–0.8, $p < 0.001$). Duration of residence also influenced unmet need, with those living 5–9 years (AOR: 1.4, CI: 1.3–1.5), 10–14 years (AOR: 1.6, CI: 1.4–1.8), 15–19 years (AOR: 1.8, CI: 1.4–1.9), and 20–24 years (AOR: 1.3, CI: 1.1–1.7) all having higher odds compared to those who had lived in their community for 0–4 years. Interestingly, those who had always lived there (AOR: 1.2, CI: 1.2–1.3) also showed elevated odds, whereas visitors showed no significant difference (AOR: 1.0, CI: 0.9–1.3, $p = 0.907$). Regional differences were evident: AGYW in Central Africa (AOR: 0.8, CI: 0.7–0.9, $p = 0.006$), East Africa (AOR: 1.3, CI: 1.1–1.3, $p = 0.001$), and Southern Africa (AOR: 1.2, CI: 1.1–1.2, $p = 0.001$) had varied odds compared to West Africa. Lastly, recent sexual activity influenced unmet need: those active in the last 4 weeks had reduced odds (AOR: 0.7, CI: 0.6–1.0, $p = 0.030$), while postpartum inactivity and non-postpartum inactivity showed no significant associations.

Table 3: Variance Inflation Factor (VIF) of associated variables on modern contraceptive among adolescent girls and young women in sub-Saharan African Countries

Variable	VIF
Education	2.1
Literacy	2.1
Ever used anything or tried to delay or avoid getting pregnant	1.2
Type of resident	1.1
Age	1.0
Currently working	1.0
Ever had a terminated pregnancy	1.0
Years lived in place of residence	1.0
Region	1.1
Sexuality	1.0
Mean VIF	1.3

Table 4: Adjusted odd ratio of unmet need for modern contraceptive among adolescent girls and young women in sub-Saharan African Countries

VARIABLES	AOR	(95% CI)	P-VALUE
Age			
15-19	Ref	Ref	
20-24	0.9	0.9-0.9	<0.001
Education level			
No education	Ref		
Primary	1.9	1.78-2.0	<0.001
Secondary	2.1	1.9-2.3	<0.001
Higher	1.7	1.5-1.9	<0.001
Literacy			
Cannot read at all	Ref	Ref	
Able to read only parts of sentence	0.9	0.9-1.0	0.441
Able to read whole sentence	1.0	0.9-1.1	0.504
No card with required language	0.7	0.5-1.0	0.070
Blind/visually impaired	1.7	0.8-3.9	0.194
Respondent currently working			
No	Ref	Ref	
Yes	1.0	0.9-1.0	0.221
Ever had a terminated pregnancy			
No	Ref	Ref	<0.001
Yes	0.8	0.7-0.8	
Ever used anything or tried to delay or avoid getting pregnant			
No			
yes, used outside calendar	Ref	Ref	
yes, used in calendar	0.9	0.8-1.0 0.1-0.2	0.100
	0.2		<0.001
Type of place of residence			
Urban	Ref	Ref	<0.001
Rural	0.8	0.7-0.8	
Years lived in place of residence			
0-4	Ref	Ref	
5-9	1.4	1.3-1.5	<0.001
10-14	1.6	1.4-1.8	<0.001
15-19	1.8	1.4-1.9	<0.001
20-24	1.3	1.1-1.7	0.020
Always	1.2	1.2-1.3	<0.001
Visitor	1.0	0.9-1.3	0.907

Region	Ref		
West Africa			
Central Africa	0.8	0.7-0.9	0.006
East Africa	1.3	1.1-1.3	0.001
Southern Africa	1.2	1.1-1.2	0.001
Recent sexual activity			
Never had sex	Ref		
Active in last 4 weeks	0.7	0.6-1.0	0.030
Not active in last 4 weeks – postpartum	1.0	0.8-1.4	0.800
Not active in last 4 weeks - not postpa	0.8	0.6-1.0	0.061

Discussion

This study offers important contributions to the understanding of factors associated with unmet need for modern contraception among adolescent girls and young women (AGYW) in Sub-Saharan Africa. Based on the findings of the study, the pooled prevalence of unmet need for contraception among AGYW was 27.0% (95% CI: 26.5–27.5%), with country-level variation ranging from 44.1% (95% CI: 41.7–46.5%) in Angola to 13.5% (95% CI: 11.8–15.4%) in Zimbabwe. Study identified several factors associated with unmet need for contraception among AGYW. Being blind or visually impaired, residing in Central or East Africa, and having lived in the same community for 5–19 years were associated with higher odds of unmet need for contraception. On the other hand, factors such as history of contraceptive use in the prior calendar period, having had a pregnancy termination, residing in a rural area, living in Southern Africa, and postpartum abstinence were associated with lower odds of unmet need for contraception. The prevalence of unmet need for contraception among AGYW in SSA (27.0%) aligns with findings from other SSA countries. However, it was higher than the prevalence reported in Ethiopia (19.7%),²⁷ These differences may be due to differences in health systems, context and study periods.

This study found that AGYW aged 20–24 years are less likely to report unmet need compared to those aged 15–19 years. This relationship may reflect increased reproductive autonomy and decision-making capacity among older adolescents, as well as improved familiarity with sexual and reproductive health (SRH) services. This result is consistent with previous research indicating that older teenagers might have greater autonomy in

making decisions and better access to family planning tools.^{28,7}

Furthermore, older adolescents are more likely to seek and access family planning, which may contribute to reduced unmet need in this age group.²⁹ These age disparities underscore the need for targeted interventions and youth-friendly services that consider the unique challenges faced by younger adolescents

Compared to AGYW with lower education levels, AGYW with higher levels of education were associated with increased odds of unmet need for contraception. This finding is in contrast with a study conducted in SSA, which showed that AGYW with lower levels of education face significantly higher unmet SRH needs, primarily due to limited knowledge of sexual and reproductive health (SRH), and poor access to SRH services. However, higher education is generally thought to empower young women with improved autonomy, awareness of their reproductive rights, and better negotiation skills for family planning.³⁰⁻³¹ These contrasting findings highlight the possibility of access-related barriers, such as judgmental provider attitudes, and limited youth-friendly services, which often prevents uneducated AGYW from obtaining contraception. Since education lowers social obstacles and raises understanding of family planning alternatives, there is a well-established correlation between education and the use of contraceptives in Sub-Saharan Africa.³²

The study also identified disability status as a significant determinant. AGYW who were blind or visually impaired had higher odds of reporting unmet need for contraception, highlighting disparities in access to SRH services among vulnerable populations. This finding is consistent with finding from other contexts,³³ where it was

found that people with disabilities often challenges with accessing SRH services. This may be attributed to systemic shortcomings in disability-inclusive service provision, including inaccessible facilities, inadequate training of healthcare providers in disability care, and societal perceptions that exclude disabled individuals from SRH discourse.

AGYW who had experienced pregnancy termination reported significantly lower odds of unmet need. This is supported by a studies conducted in SSA³⁴⁻³⁵ revealing that that reproductive experiences often shape future contraceptive behavior, particularly when accompanied by appropriate health education and service provision. This association may reflect the impact of post-abortion counseling, which often includes tailored family planning guidance that increases contraceptive awareness and uptake. Additionally, the emotional and physical consequences of unintended pregnancy may strengthen AGYW's to avoid future occurrences, thereby reducing unmet need.

Prior use of contraceptive methods was strongly associated with lower unmet need, emphasizing the importance of exposure and continuity in SRH behavior. Familiarity with contraceptive options likely fosters confidence and sustained use, while also reducing misinformation and stigma. This finding aligns with findings from other studies³⁶⁻³⁷ which found that repeat exposure to contraceptives improves method adherence and facilitates switching when needed, thereby reducing discontinuation. Moreover, repeated engagement with contraceptive services can build trust in providers and normalize SRH discussions, helping to dismantle stigma and encourage continuity.

This study revealed that there were lower odds of unmet need among AGYW residing in rural areas compared to those living in urban areas. While literature commonly attributes higher unmet need in rural settings to service inaccessibility and sociocultural barriers,³⁸ this finding may reflect contextual factors such as differing fertility preferences, and successful community-level outreach. Further research is needed to clarify these patterns and ensure appropriate targeting of rural populations in policy design. Additionally, limited exposure to competing narratives and

misinformation common in urban settings may support clearer decision-making around family planning in rural areas.

Longer residence was associated with increased unmet need, particularly among AGYW who had lived in their community for 5–19 years. Longer residence may lead to greater integration into local sociocultural norms that inhibit contraceptive uptake or expose individuals to enduring structural barriers. A similar observation was found in Nigeria³⁹ where social embeddedness was found to shape reproductive attitudes and behaviors over time. This association may reflect how prolonged exposure to community norms and expectations can reinforce traditional beliefs that discourage contraceptive use. Additionally, AGYW with longer residence may be more influenced by familial pressures, limiting their autonomy in reproductive decision-making, indicating a need for culturally responsive programming.

Subregional variation was also observed in this current study, with AGYW in Central and East Africa reporting higher unmet need compared to their counterparts in West Africa, while those in Southern Africa had lower odds. These differences may be explained by variability in health system performance, SRH policy frameworks, and sociocultural attitudes across regions. Southern Africa, for example, has made significant strides in implementing youth-friendly services and expanding access to modern contraceptives, which may contribute to the lower observed unmet need.⁴⁰ In contrast, some countries in East Africa often face challenges such as limited health infrastructure, restrictive norms around adolescent sexuality, and inconsistent policy implementation.⁴¹ These factors can hinder access to modern contraceptives and perpetuate unmet need. The subregional variation underscores the importance of tailoring interventions to local contexts.

Overall, these findings underscore the multifaceted nature of unmet contraceptive need among AGYW in Sub-Saharan Africa and point to critical intervention areas, including education-service alignment, disability inclusion, targeted outreach, and culturally tailored health messaging. Addressing these factors holistically will be of public health importance in reducing unmet need

and advancing reproductive autonomy across the region.

Strengths of the study

This study benefits from the use of nationally representative and weighted data, making the findings broadly generalizable to adolescent girls and young women (AGYW) across Sub-Saharan African countries. The large sample size enhances the statistical power of the analysis, increasing the precision of estimates and the reliability of the findings.

Limitations of the study

The cross-sectional nature of the data limits the ability to establish causal relationships between explanatory factors and unmet need for contraception. Additionally, the reliance on self-reported data from Demographic and Health Surveys (DHS) introduces the potential for recall bias and social desirability bias, which may affect the accuracy of responses.

Furthermore, the use of secondary data restricts the scope of variables available for analysis. Important factors such as provider attitudes, entrenched cultural norms, and detailed health system characteristics could not be included, despite their potential influence on unmet need for contraception.

Implications for policy and practice

The findings underscore the urgent need for targeted interventions to address the unmet contraceptive needs of AGYW, particularly in underserved and marginalized settings. Investments in expanding health insurance coverage, improving access to youth-friendly reproductive health services, and enhancing the availability of contraceptive methods through well-equipped health facilities are critical.

To address limitations inherent in survey data, future research should incorporate qualitative approaches to explore system-level and sociocultural barriers to contraceptive use. Policymakers and stakeholders must ensure that reproductive health strategies are responsive to the specific needs of AGYW, employing both supply-side and demand-side

approaches to improve access, acceptability, and utilization of modern contraceptive methods.

Conclusion

These results highlight the necessity of focused interventions, especially for younger women living in rural areas, and with less education. Enhancing rural healthcare infrastructure, expanding community-based contraception distribution, and incorporating family planning information into school curricula should be the main goals of policy initiatives. Persistent obstacles to the use of contraceptives may also be addressed by culturally relevant initiatives including male partners and community leaders. In order to determine causal pathways and assess the efficacy of customized therapies, future research should investigate longitudinal patterns. Reducing the unmet demand for contraception and enhancing the reproductive health of AGYW in Sub-Saharan Africa require addressing these issues.

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Authors' contributions

A.M.M. conceptualized this study. A.M.M. and S.G.S. worked on the data analysis, literature review, and interpretations of findings. O.M. & I.M.B. contributed to data interpretation, provided intellectual input, critically reviewed the manuscript with suggestions and guidance, and all authors have approved the final version.

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