Original Article

Understanding Risk Factors for Unmet Contraceptive Needs Among Married and Cohabiting Women in Sub-Saharan Africa: Evidence from 22 Countries

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Abstract

Background
Unmet need for contraception remains a pressing challenge in sub-Saharan Africa (SSA), contributing to high rates of unintended pregnancies and adverse maternal outcomes despite interventions. This study assessed individual and contextual factors associated with unmet contraceptive needs among married and cohabiting women.

Methods
We analyzed Demographic and Health Survey data from 22 SSA countries collected between 2016 and 2023, comprising a weighted sample of 186,813 women aged 15–49 years. Multilevel logistic regression was applied to identify predictors of unmet need.

Results
The overall prevalence of unmet need was 21.8%, ranging from 12.5% in Rwanda to 33.9% in Liberia. Central Africa recorded the highest regional prevalence (23.5%), while Southern Africa reported the lowest (18.5%). Cohabiting women, younger women, and those with higher parity had increased odds of unmet need. In contrast, higher educational attainment, employment, and exposure to family planning messages through mass media reduced the odds. Unexpectedly, internet use and reported sexual autonomy were associated with slightly higher unmet need.

Conclusion
Policies should prioritize education, increase access to contraception, and strengthen community health outreach, with particular focus on cohabiting women and those with large family sizes.

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Keywords: Contraceptive use, Unmet need, Reproductive Health, Risk factors, Married women, Cohabiting women

Introduction

The persistence of unmet need for contraception (UNC) remains a formidable obstacle to realizing sexual and reproductive health (SRH) rights, particularly across sub-Saharan Africa (SSA). UNC is commonly defined as the proportion of fecund women who desire to delay or stop childbearing yet are not utilizing any form of contraception. [1] This gap continues to drive unintended pregnancies, unsafe abortions, and elevated maternal morbidity and mortality.[2,3] Despite significant global commitments to advancing SRH, many women in SSA remain without reliable and affordable family planning (FP) services.[4]

Globally, of the 1.9 billion women of reproductive age in 2021, an estimated 1.1 billion expressed a need for FP, with about 164 million experiencing UNC.[5] By 2024, the global satisfaction with modern contraceptive methods reached 77.1%. However, SSA continues to trail behind, recording only 58% coverage, a modest rise from 52% in 2015.[6,7] In comparison, countries such as Finland, Canada, and the United Kingdom report contraceptive prevalence levels exceeding 70%. Within SSA, regional inequalities remain stark, with West and Central Africa consistently exhibiting the lowest uptake of modern methods.[8]

These gaps persist despite international and continental commitments. The 1994 International Conference on Population and Development (ICPD) established universal access to contraception and other SRH services as a fundamental human right. [9] This mandate was echoed through the Millennium Development Goals (MDGs) and reinforced by the Sustainable Development Goals (SDGs), particularly Target 3.7, which advocates universal access to SRH services by 2030.[10] Regionally, the African Union's Agenda 2063 and the Maputo Plan of Action (2016–2030) reaffirm the urgency of integrated, equitable, and comprehensive FP programs across African nations.[11]

Many SSA countries have introduced national strategies to expand contraceptive access. Nigeria's National FP/Reproductive Health Policy has prioritized demand creation and community-based distribution. [12] Kenya's FP Costed Implementation Plan (2017–2020) targeted underserved communities,[13] while Rwanda's FP Strategic Plan (2018–2024) institutionalized free contraceptive services in public facilities.[14] Nevertheless, progress has been uneven. Persistent barriers, including socio-cultural norms, religious opposition, systemic weaknesses in service delivery, and widespread misinformation, continue to hinder women's ability to meet their contraceptive needs.[15–17] Much of the existing scholarship has concentrated on individual-level predictors such as age, parity, educational attainment, and employment.[18,19] Far fewer studies have examined broader contextual influences, including spousal education, household wealth, media exposure, and rural-urban divides, despite evidence that these factors significantly shape reproductive behaviours. [20,21]

An additional knowledge gap is the role of marital arrangements, particularly cohabitation, in shaping contraceptive outcomes.[22,23] Evidence indicates that cohabiting women may face heightened difficulties in negotiating contraceptive use compared with their married counterparts. Moreover, emerging research complicates long-standing assumptions about women's empowerment. While empowerment is generally associated with improved contraceptive uptake, some findings suggest that sexual autonomy may have paradoxical effects depending on prevailing cultural norms and service availability. [24,25] This study draws on the Health Belief Model, which conceptualizes contraceptive behaviour as the product of perceived benefits, barriers, and cues to action within broader social and health system contexts. [26,27]

In response to these gaps, the present study investigates both individual and contextual determinants of UNC among married and cohabiting women in 22 SSA countries. Leveraging recent Demographic and Health Survey (DHS) data (2016–2023) and employing multilevel logistic regression models, we provide a comprehensive analysis of demographic, behavioural, and structural drivers of contraceptive shortfalls. The insights generated aim to inform policies and interventions tailored to the diverse SRH landscapes of SSA, thereby advancing progress toward equitable and universal contraceptive access.

Methods

Study design and data source

This study adopted a cross-sectional secondary analysis design utilizing nationally representative data derived from the DHS conducted between 2016 and 2023 across 22 SSA countries. The DHS, implemented periodically in low- and middle-income settings, are internationally recognized for generating reliable data on maternal, reproductive, and population health indicators. A stratified two-stage cluster sampling approach was utilized to ensure adequate representation across geographic regions, socioeconomic groups, and both urban and rural populations.

Data collection procedures

Data collection was carried out through structured, standardized questionnaires administered during face-to-face interviews by trained personnel. The DHS surveys were implemented by national statistical agencies or designated research institutions in each participating country in collaboration with ICF International under the DHS Program. Data collection followed a standardized protocol across countries to ensure comparability. Face-to-face interviews were conducted using the DHS Women's Questionnaire, administered to eligible women aged 15–49 years within selected households. Interviews were carried out by trained female interviewers to enhance respondent comfort and minimize reporting bias, particularly for sensitive reproductive health questions. Interviewers underwent centralized training lasting approximately 3–4 weeks, covering questionnaire content, ethical considerations, informed consent procedures, interview techniques, and field practice. Surveys' data were captured electronically using Computer-Assisted Personal Interviewing (CAPI) deviceInterviews were conducted privately within households to ensure confidentiality. The face-to-face format was used to maximize response rates, reduce literacy barriers, and allow clarification of questions when necessary. The surveys captured a broad spectrum of information, including contraceptive behaviour, fertility intentions, household assets, and sociodemographic characteristics. The datasets analyzed in this study are publicly available from the DHS Program data repository. The reporting of this analysis complies with the STROBE guidelines.[28]

Study population and sample size

The analytic sample comprised fecund women aged 15–49 years who were either married or living in cohabiting unions at the time of the survey. This study focused on married and cohabiting women because the DHS unmet need algorithm is most consistently defined and reported for women in union. Limiting the analysis to this group enhanced cross-country comparability across the 22 surveys conducted between 2016 and 2023. It also supported the study analytical interest in union-level dynamics such as partner education, decision-making autonomy, and fertility negotiation. After applying sampling weights and implementing exclusion criteria, the final pooled sample consisted of 186,813 women across the 22 study countries. Table 1 presents the distribution of participants by country, survey year, regional bloc, and the proportional contribution of each country to the weighted sample.

Sampling procedure and participant selection

The DHS employed a stratified two-stage cluster sampling design. Stage 1 was selection of clusters.

Enumeration Areas (EAs), derived from the most recent national census sampling frame in each country, were selected using probability proportional to size. Stratification was typically done by region and urban–rural residence. Stage 2 was selection of households. Within each selected EA, a fixed number of households (usually 20–30) were systematically sampled from updated household listings. All women aged 15–49 years who were either usual residents of selected households or visitors who slept in the household the night before the survey were eligible for the individual women's interview.

Inclusion and Exclusion criteria

For this pooled secondary analysis, inclusion criteria included being women aged 15–49 years, currently married or living with a partner (cohabiting), fecund (i.e., biologically capable of becoming pregnant), and sexually active (as defined by DHS marital/union status). The exclusion criteria included pregnant women at the time of the survey, women classified as infecund or menopausal, women who had never had sexual intercourse, and women with missing data on key outcome or explanatory variables.

Study variables and data processing

The dependent variable was UNC. The DHS UNC variable (v626a) was used. The DHS variable (v626a) is a constructed indicator derived from responses to multiple questionnaire items, including current contraceptive use (v312), fertility preference (v602), pregnancy status (v213), and related reproductive variables. In accordance with DHS definitions, UNC was operationalized as the percentage of women who reported a desire to delay the next birth or cease childbearing altogether but were not using any contraceptive method.This includes women who were fecund and sexually active, were not using any contraceptive method (modern or traditional), and wanted to delay their next birth by at least two years (unmet need for spacing) or wanted no more children (unmet need for limiting). Respondents classified as having UNC for either spacing or limiting were coded "1" (yes), while all others were coded "0" (no).

Explanatory variables were selected based on theoretical relevance and prior empirical evidence and were categorized into individual-level and contextual-level factors.

Individual-level variables

Marital status was categorized as married or cohabiting. Age was grouped into seven five-year categories (15–19, 20–24, …, 45–49 years). Educational attainment was coded as no education, primary, secondary, or higher education. Employment status was dichotomized as currently working or not working. Parity was measured using the total number of children ever born and categorized as 0, 1, 2, 3, 4, 5, and 6 or more children. Sexual autonomy was constructed as a binary variable based on women's reported ability to refuse sexual intercourse and/or request condom use. Women who answered "yes" to at least one of these questions were classified as having sexual autonomy ("1"), while those who answered "no" to both were classified as lacking sexual autonomy ("0"). Media exposure to FP messages was generated from three DHS items assessing exposure through radio, television, or newspapers/magazines. Women who reported exposure through at least one medium were coded as "yes", while those with no exposure across all media were coded as "no". Internet use was coded as a binary variable indicating whether the respondent had used the internet within the 12 months preceding the survey. Knowledge of modern contraceptive methods was coded as "yes" if a woman reported knowing at least one modern method and "no" otherwise. Decision-making autonomy was assessed using two DHS variables capturing who usually makes decisions regarding (1) large household purchases and (2) personal health care. Each variable was categorized as respondent alone, joint decision-making, partner alone, or others.

Contextual-level variables

Contextual variables included partner's

educational attainment (no education, primary, secondary, or higher), household wealth index, place of residence, and sub-regional location within sub-Saharan Africa. The wealth index, constructed by DHS using principal component analysis of household assets, was categorized into five quintiles: poorest, poorer, middle, richer, and richest. Place of residence was classified as urban or rural. Countries were grouped into West, Central, East, and Southern Africa based on United Nations regional classifications.[29]

Statistical analysis

The analysis proceeded in sequential stages. Descriptive statistics were first employed to profile the sample population and estimate the prevalence of UNC across subgroups. Pearson's chi-square tests were conducted to evaluate bivariate associations between UNC and explanatory variables. Subsequently, multilevel logistic regression models were fitted to identify risk factors while accounting for the nested structure of the data. Four models were estimated sequentially: Model I adjusted for marital status alone; Model II incorporated individual-level variables; Model III introduced contextual-level variables; and Model IV included bothindividual- and contextual-level covariates simultaneously. Adjusted odds ratios (aOR) with 95% confidence intervals (CI) were reported as measures of association. Model adequacy was evaluated using the −2 Log Likelihood statistic, Hosmer–Lemeshow goodness-of-fit test, and Nagelkerke R^2.Survey weights were applied to adjust for the complex sample design using the DHS-provided weighting factor (v005), rescaled by dividing by 1,000,000. Observations with missing values were dropped from analysis to preserve data integrity. Multicollinearity diagnostics were performed using the Variance Inflation Factor (VIF), with all values ranging from 1.04 to 2.21, indicating absence of serious collinearity. Statistical analyses were conducted using SPSS version 27, and significance was assessed at the 5% threshold ($p < 0.05$).

Ethical considerations

Ethical approval for the original DHS data collection was obtained by implementing agencies in each participating country, with oversight provided by the ICF Institutional Review Board (IRB# FWA00000845). Written informed consent was obtained from all respondents before participation. For this secondary analysis, no additional ethical approval was required as the datasets were fully anonymized and are publicly available through the DHS Program website.[30]

Results

Table 1. Sample size and survey year

Country	Year	Sample (Weighted)	Percent	SSA Region
Burkina Faso	2021	11,389	6.1	Western Africa
Benin	2017	4,885	2.6	Western Africa
Burundi	2016	9,635	5.2	Central Africa
Cote d'Ivoire	2021	8,657	4.6	Western Africa
Cameroon	2018	6,947	3.7	Central Africa
Ethiopia	2016	9,878	5.3	Eastern Africa
Gabon	2019-21	2,457	1.3	Central Africa
Ghana	2022-23	7,973	4.3	Western Africa
Gambia	2019-20	6,510	3.5	Western Africa
Guinea	2018	6,600	3.5	Western Africa
Kenya	2022	8,886	4.8	Eastern Africa
Liberia	2019-20	3,833	2.1	Western Africa
Madagascar	2021	10,941	5.9	Eastern Africa
Mali	2018	7,820	4.2	Western Africa
Mauritania	2019-21	6,545	3.5	Western Africa
Nigeria	2018	27,736	14.8	Western Africa
Rwanda	2019-20	7,325	3.9	Central Africa
Sierra Leone	2019	9,166	4.9	Western Africa
Tanzania	2022	8,838	4.7	Eastern Africa
Uganda	2016	10,661	5.7	Eastern Africa
South Africa	2016	2,864	1.5	Southern Africa
Zambia	2018	7,266	3.9	Southern Africa
Total	-	186,813	100.0	-

Source: DHS 2016-2023; SSA – Sub-Saharan Africa

Figure 1 presents the prevalence of UNC among respondents across SSA countries. The data reveals variations. Rwanda has the lowest prevalence at 12.5%.Liberia has the highest UNC at 33.9%. The average prevalence across all countries is 21.8%, demonstrating that a considerable proportion of women in the region still lack the necessary resources and support to meet their contraceptive needs.

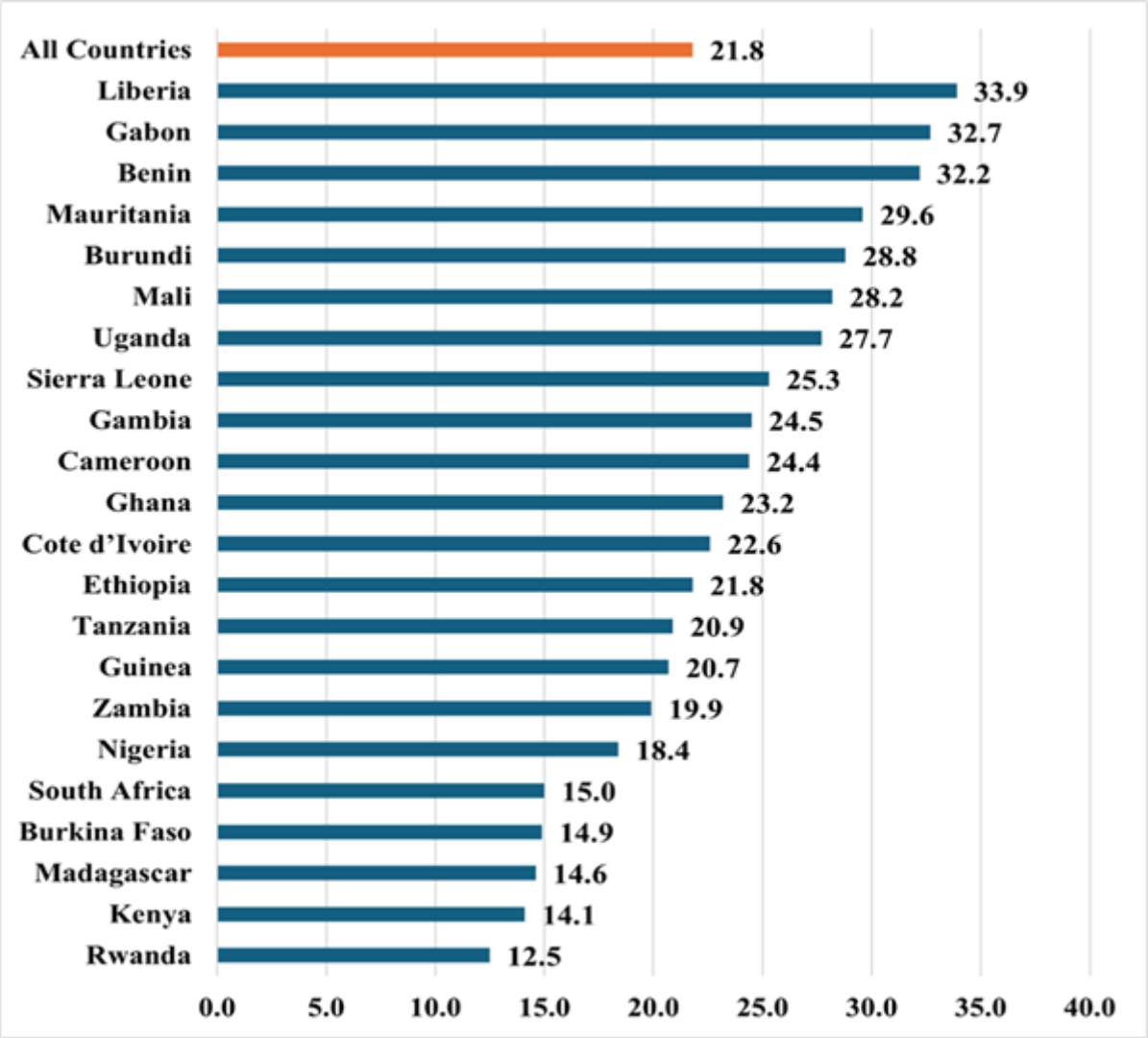

Figure1. Prevalence of unmet contraceptive need among respondents by country

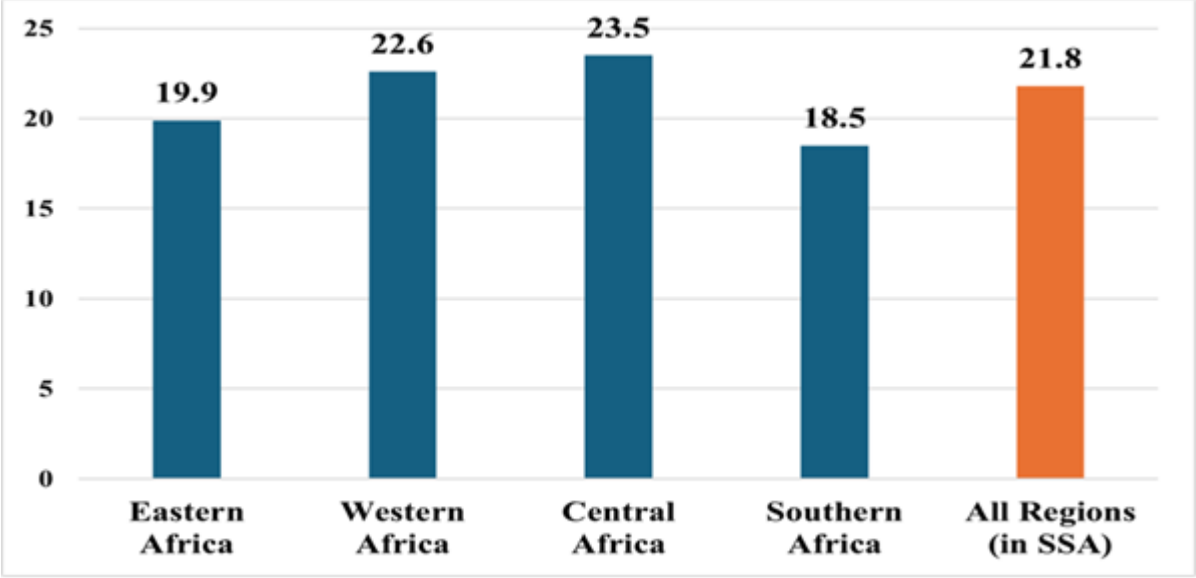

Figure 2. Prevalence of unmet contraceptive need among respondents by SSA regions

Figure 2 presents the prevalence of UNC among respondents across different regions of SSA. Central Africa has the highest UNC at 23.5%, followed by Western Africa at 22.6%. Eastern Africa has a slightly lower prevalence at 19.9%, while Southern Africa has the lowest UNC at 18.5%. The overall average prevalence for all regions in SSA is 21.8%. This highlights regional variations in contraceptive access and use within SSA.

Table 2. Socio-demographic characteristics and unmet contraceptive need among respondents (n = 186,813)

Variable	Category	N	% of Sample	No (%)	Yes (%)	p-value
Marital status	Married	152,523	81.6	78.6	21.4	<0.001
	Cohabiting	34,290	18.4	76.2	23.8	
Age group	15–19	11,013	5.9	79.6	20.4	<0.001
	20–24	29,815	16.0	79.6	20.4	
	25–29	38,978	20.9	80.3	19.7	
	30–34	35,469	19.0	78.3	21.7	
	35–39	31,549	16.9	76.0	24.0	
	40–44	22,615	12.1	74.6	25.4	
	45–49	17,374	9.3	78.4	21.6	
Education	None	75,201	40.3	76.7	23.3	<0.001
	Primary	54,448	29.1	77.7	22.3	
	Secondary	46,198	24.7	79.6	20.4	
	Higher	10,965	5.9	84.7	15.3	
Employment	No	62,870	33.7	77.8	22.2	0.007
	Yes	123,943	66.3	78.4	21.6	
Sexual autonomy	No	101,849	54.5	77.8	22.2	<0.001
	Yes	84,963	45.5	78.6	21.4	
Internet use	No	153,015	81.9	77.6	22.4	<0.001
	Yes	33,798	18.1	80.8	19.2	
Media exposure (FP)	No	158,380	84.8	77.6	22.4	<0.001
	Yes	28,432	15.2	81.7	18.3	
Knowledge of FP	None	5,798	3.1	80.6	19.4	<0.001
	Knows methods	181,015	96.9	78.1	21.9	
Decision-maker (purchases)	Respondent	23,712	12.7	75.6	24.4	<0.001
	Joint	83,064	44.5	79.4	20.6	
	Partner	78,297	41.9	77.9	22.1	
	Others	1,740	0.9	71.7	28.3	
Decision-maker (healthcare)	Respondent	37,682	20.2	77.8	22.2	<0.001
	Joint	75,641	40.5	79.0	21.0	
	Partner	72,411	38.8	77.6	22.4	
	Others	1,079	0.6	70.7	29.3	
Children ever born	0	12,438	6.7	91.2	8.8	<0.001
	1	27,494	14.7	82.8	17.2	
	2	31,988	17.1	82.0	18.0	
	3	29,605	15.8	79.8	20.2	
	4	24,565	13.1	77.8	22.2	
	5	19,535	10.5	74.9	25.1	
	6+	41,189	22.0	68.8	31.2	
Partner's education	None	66,829	35.8	76.8	23.2	<0.001
	Primary	50,840	27.2	78.2	21.8	
	Secondary	50,552	27.1	78.8	21.2	
	Higher	18,592	10.0	81.4	18.6	
Wealth index	Poorest	37,188	19.9	76.3	23.7	<0.001
	Poorer	37,309	20.0	77.0	23.0	
	Middle	36,892	19.7	77.7	22.3	
	Richer	37,559	20.1	78.9	21.1	
	Richest	37,865	20.3	81.0	19.0	
Residence	Urban	66,653	35.7	78.8	21.2	<0.001
	Rural	120,159	64.3	77.9	22.1	
SSA region	West	101,114	54.1	77.4	22.6	<0.001
	Central	26,364	14.1	76.5	23.5	
	East	49,205	26.3	80.1	19.9	
	South	10,131	5.4	81.5	18.5	

Note: Data are weighted. All differences are statistically significant at $p < 0.05$ using Pearson chi-square test. SSA = sub-Saharan Africa.

Table 2 presents summary of the demographic and socioeconomic distribution of respondents in relation to UNC, derived from a weighted sample of 186,813 women. The findings demonstrate notable disparities across both demographic and contextual characteristics. Cohabiting women reported a slightly higher prevalence of UNC (23.8%) compared with their married counterparts (21.4%). Age differentials were also evident, with the highest levels recorded among women aged 40–44 years (25.4%), while the lowest prevalence appeared in the 25–29 age group (19.7%).

Educational attainment revealed a distinct gradient, with UNC decreasing as education increased. Women with higher education reported the lowest levels (15.3%), whereas those with no formal education exhibited substantially higher UNC (23.3%). Beyond education, multiple other determinants shaped contraceptive gaps. Employment status, degree of sexual autonomy, internet access, exposure to FP information through mass media, knowledge of modern contraceptive methods, and participation in household decision-making all demonstrated significant associations with UNC. Parity, spousal educational attainment, household wealth, and place of residence (urban versus rural) further emphasized contraceptive disparities across the region.

Table 3 summarizes the outcomes of the multilevel logistic regression analysis, examining predictors of UNC across four sequential models. Model I, which was solely for marital status, indicated that women in cohabiting unions were significantly more likely to experience UNC compared to those who were married (aOR 1.15, 95% CI: 1.12–1.18). Model II, which incorporated individual-level factors, revealed that adolescents aged 15–19 years faced the greatest risk of UNC, while older age groups demonstrated comparatively lower odds. Higher levels of education, current engagement in employment, and exposure to FP messages through the media emerged as protective factors, each significantly reducing the probability of UNC.

Model III, focused on contextual characteristics, demonstrated that spousal educational attainment, higher household wealth, and urban residence were all associated with reduced odds of UNC.

Model IV, which simultaneously controlled for both individual and contextual variables, confirmed and expanded upon these associations. Cohabiting women remained at significantly elevated risk of UNC (aOR 1.22, 95% CI: 1.19–1.26). The analysis showed that women aged 45–49 had the lowest likelihood of UNC relative to those aged 15–19. Educational advancement was associated with a 5% reduction in UNC, current employment with a 9% reduction, and regular exposure to FP messages with a 13% reduction. In contrast, parity demonstrated a strong positive association with UNC: women with six or more children had more than ten times the odds of UNC compared to childless women (aOR 10.18, 95% CI: 9.40–11.01).

Regional and socioeconomic disparities were also evident. Women residing in urban areas and those in households with lower wealth indices were more likely to experience UNC compared to their wealthier or rural counterparts. Regional variation showed that women in Central Africa faced higher UNC relative to those in West Africa, while women in Southern Africa had the lowest probability, with a 24% reduced likelihood, followed by Eastern Africa with a 16% reduction. Overall, model diagnostics indicated that Model IV offered the best fit, evidenced by the highest Nagelkerke R^2 value (0.47) and statistically significant chi-square statistics, underscoring the robustness of the full model in explaining variations in UNC across the study population.

Table 3. Multilevel logistic regression of unmet need for contraception among respondents (n = 186,813)

Predictor	Model I (OR, 95% CI)	Model II (aOR, 95% CI)	Model III (aOR, 95% CI)	Model IV (aOR, 95% CI)
Marital status (ref: Married)				
Cohabiting	1.15*** [1.12–1.18]			1.22*** [1.19–1.26]
Age group (ref: 15–19)				
20–24		0.68*** [0.64–0.72]		0.67*** [0.64–0.72]
25–29		0.47*** [0.44–0.50]		0.47*** [0.44–0.49]
30–34		0.41*** [0.38–0.44]		0.40*** [0.38–0.43]
35–39		0.37*** [0.36–0.41]		0.38*** [0.36–0.41]
40–44		0.38*** [0.36–0.41]		0.37*** [0.35–0.40]
45–49		0.29*** [0.27–0.32]		0.29*** [0.27–0.31]
Education (ref: No education)				
Primary		1.02 [0.99–1.05]		1.04** [1.01–1.08]
Secondary		1.12*** [1.08–1.16]		1.08*** [1.04–1.13]
Higher		0.96 [0.90–1.02]		0.95 [0.88–1.02]
Currently working (ref: No)		0.94*** [0.92–0.96]		0.91*** [0.89–0.93]
Sexual autonomy (ref: No)		1.04*** [1.02–1.07]		1.04** [1.01–1.06]
Internet usage (ref: No)		1.14*** [1.10–1.18]		1.07*** [1.03–1.11]
Media exposure to FP (ref: No)		0.87*** [0.84–0.89]		0.87*** [0.84–0.91]
Knowledge of FP (ref: No)		1.17*** [1.09–1.25]		1.16*** [1.09–1.25]
Decision-maker: purchases (ref: Respondent)				
Joint		0.81*** [0.78–0.84]		0.84*** [0.81–0.87]
Partner		0.84*** [0.80–0.87]		0.85*** [0.81–0.88]
Others		1.30*** [1.15–1.48]		1.31*** [1.15–1.49]
Decision-maker: healthcare (ref: Respondent)				
Joint		1.00 [0.97–1.04]		0.98 [0.95–1.01]
Partner		1.11** [0.97–1.04]		0.96* [0.93–0.99]
Others		1.28*** [1.10–1.50]		1.23** [1.06–1.44]
Children ever born (ref: 0)				
1		2.43*** [2.40–2.30]		2.46*** [2.29–2.84]
2		3.17*** [2.95–3.41]		3.25*** [3.02–3.48]
3		4.23*** [3.92–4.56]		4.37*** [4.05–4.71]
4		5.22*** [4.83–5.64]		5.41*** [5.01–4.85]
5		6.54*** [6.04–7.08]		6.79*** [6.26–7.36]
6+		9.63*** [8.90–10.42]		10.18*** [9.40–11.01]
Partner's education (ref: No education)				
Primary			1.00 [0.97–1.03]	1.01 [0.98–1.04]
Secondary			0.98 [0.95–1.01]	1.07*** [1.03–1.11]
Higher			0.87*** [0.83–0.91]	1.09** [1.03–1.15]
Wealth index (ref: Poorest)				
Poorer			0.96* [0.93–0.99]	0.98 [0.95–1.02]
Middle			0.92*** [0.89–0.95]	0.97 [0.93–1.00]
Richer			0.84*** [0.81–0.88]	0.94** [0.90–0.98]
Richest			0.74*** [0.71–0.76]	0.94* [0.89–0.98]
Residence (ref: Urban)			0.91*** [0.88–0.94]	0.89*** [0.86–0.92]
Region (ref: West Africa)				
Central Africa			1.06*** [1.02–1.09]	1.02 [0.99–1.06]
East Africa			0.87*** [0.85–0.89]	0.84*** [0.81–0.86]
South Africa			0.78*** [0.74–0.82]	0.76*** [0.72–0.80]
Model Diagnostics				
Chi-square (x^2)	98.19***	6165.55***	616.06***	6715.42***
−2 Log Likelihood	195880.26	189812.90	195362.39	189263.03
Nagelkerke R^2	0.06	0.15	0.11	0.47
Hosmer & Lemeshow	0.07	0.13	0.12	0.25

Notes: OR = Odds Ratio; aOR = Adjusted Odds Ratio; CI = Confidence Interval; Ref = Reference category; *p < 0.05, **p < 0.01, ***p < 0.001; Model I: marital status only; Model II: individual-level variables; Model III: contextual variables; Model IV: all variables.

Discussion

This study assessed UNC among married and cohabiting women across SSA countries, identifying both individual and contextual risk factors. The analysis revealed cross-country and regional disparities, and highlighted significant sociodemographic and behavioural determinants. Rwanda reported the lowest prevalence of UNC, while Liberia recorded the highest, highlighting a persistent gap in access to FP across SSA. The differences between the two countries likely reflect variations in policy commitment and service delivery, as Rwanda has long institutionalized free contraceptive services,[31] whereas Liberia lacks comparable supportive frameworks.[3,32] The implication is that sustained political will and investment in universal, low-cost FP services can reduce UNC substantially.

Cohabiting women demonstrated significantly higher odds of UNC than married women, reflecting weaker relationship stability and reduced bargaining power in contraceptive decision-making, particularly in cohabiting unions in SSA. This aligns with earlier research suggesting that women in less formal unions face weaker social support, unstable partnerships, and reduced decision-making power in reproductive matters.[22] The policy implication is that FP programs must explicitly target cohabiting unions, where negotiations around contraceptive use are often more complex. Younger women, particularly adolescents aged 15–19, were most affected by UNC, with odds decreasing as age advanced. This pattern highlights the vulnerability of adolescents to socio-cultural stigma, limited knowledge, and reduced autonomy in accessing services.[33,34] Conversely, women aged 45–49 reported the lowest UNC, possibly due to accumulated experience and improved access over time[35]. Addressing adolescent contraceptive needs through youth-friendly services and education is therefore critical.

Higher educational attainment and employment status emerged as protective factors. Educated women had greater ability to make informed reproductive choices, consistent with findings from Pakistan,[36] Ethiopia,[25] and Bangladesh.[37] Employment also enhanced women's capacity to afford and access contraceptive services.[24] These findings reinforce the importance of integrating female education and economic empowerment into reproductive health strategies. Exposure to FP messages through mass media significantly reduced the odds of UNC. This demonstrates the pivotal role of information in shaping reproductive decisions and aligns with prior evidence from Ethiopia and other SSA contexts.[25] Policies that expand FP communication campaigns through radio, television, and digital platforms could therefore yield measurable improvements.

Unexpectedly, women who reported sexual autonomy had slightly higher UNC. While empowerment is generally linked to improved contraceptive use, this finding suggests that autonomy does not always translate into service access. Structural barriers such as limited availability of methods, socio-economic constraints, or conflicting cultural norms may undermine the benefits of autonomy.[23,24] Qualitative research is needed to explore how autonomy interacts with external constraints to influence contraceptive outcomes. Internet use was also positively associated with UNC, contrary to expectations and prior studies that showed online access facilitates contraceptive uptake.[38,39] A possible explanation is that exposure to online information increases awareness of modern methods but, without parallel improvements in local service delivery, this awareness may heighten perceived UNC. Furthermore, misinformation online could discourage use.[40,41] This finding highlights the urgency of strengthening digital health interventions to provide accurate, actionable FP information.

Women with higher parity, especially those with six or more children, were at greatest risk of UNC.

This finding suggests that women with large family sizes may still desire to stop or delay childbearing but face persistent cultural or logistical barriers to contraception.[2,25] FP programs must prioritize high-parity women, who are at increased risk of maternal health complications and whose contraceptive needs remain unmet. Partner's education and household wealth were protective against UNC, reflecting the role of socioeconomic privilege in facilitating access.[19,42] Conversely, women in urban areas were more likely to experience UNC than rural women. This contrasts with earlier studies[20,43] but may be explained by greater fertility preferences for smaller families in urban areas, leading to higher demand for contraception that health systems struggle to meet.[44,45] These findings highlight the importance of nuanced urban FP strategies that address both demand and accessibility.

Central Africa exhibited the highest UNC, while Southern Africa had the lowest, followed by Eastern Africa. These differences likely reflect variations in health infrastructure, cultural norms, and policy implementation.[21,46,47] Tailored regional strategies are required, with emphasis on strengthening weak health systems in Central Africa and addressing persistent cultural barriers in West Africa. These results are consistent with the Health Belief Model.[26,27,48] Higher education and media exposure, which enhance perceived benefits, reduced UNC, while low socioeconomic status and structural barriers increased perceived obstacles. The role of autonomy and marital context demonstrates how individual perceptions interact with broader contextual barriers, shaping contraceptive behaviours.[23,49] This theoretical framing demonstrates the multifactorial nature of UNC in SSA.

Strengths and limitations

This work's strengths begin with the utilization of data from 186,813 individuals. This large and diverse sample improves results' generalizability across SSA. DHS data is well-known for its consistent and high-quality data collection methods. This ensures the accuracy and trustworthiness of the outcomes. The DHS polls are nationally representative. It encompasses a wide range of health and demographic variables. Using multilevel logistic regression models in addition to these allows for more precise analysis of FP risk indicators at multiple levels.

Regarding limitations, the cross-sectional nature of DHS data restricts drawing of causal inferences. The correlations seen between the UNC and the independent variables cannot be interpreted as causal linkages. The study is based on self-reported data. This means there may be recall and social desirability biases playing a role here. Women may overreport or underreport their use of contraception and reproductive intentions. The study focused solely on married and cohabiting women. This excludes unmarried women who may be sexually active but have UNC in SSA. Future research should consider this group in order to provide a more detailed image. Although the study considered contextual factors such as the husband's education, wealth index, and location of residence, other context-specific risk variables may not have been addressed. Despite these limitations, this study contributes valuable data to influence policies and programs aimed at improving FP services in SSA.

Research and policy implications

The findings have implications for both policy and research. First, the identification of individual and contextual risk indicators highlights the importance of study into the societal and economic barriers that women face in getting and using contraception services. Future research should look into how contraceptive needs evolve throughout time. Qualitative research could provide an in-depth examination of the personal and community-level factors influencing contraception use. This will provide support for our numerical results.

From a policy aspect, scaling up youth-friendly SRH health services, characterized

by privacy, non-judgmental care, and flexible delivery, remains essential for addressing high unmet need among adolescents and young women. Integrating FP into routine primary health care, including antenatal, postpartum, and child immunization services, can improve access for high-parity and cohabiting women who face persistent barriers to contraceptive use. Embedding FP within universal health coverage and national health insurance schemes is critical for reducing financial barriers, ensuring commodity security, and promoting continuity of use, particularly among poorer households. Sustained mass-media and digital communication campaigns should be strengthened to counter misinformation and normalize contraceptive use, especially in urban and high-demand settings. Importantly, women's empowerment initiatives must be matched with service availability and system readiness so that increased autonomy translates into effective contraceptive access. Context-specific approaches, particularly in Central and West Africa, are needed to strengthen health system capacity and address persistent regional inequalities in FP access.

Conclusion

This study provides multi-country evidence on the individual and contextual determinants of UNC among married and cohabiting women in SSA. The findings demonstrate that unmet need remains substantial and is shaped by intersecting life-course, socioeconomic, and structural factors. It emphasizes that UNC reflects not only individual preferences but also persistent gaps in health system responsiveness and access. For policy makers, these points to the urgent need for implementing differentiated FP strategies that prioritize adolescents and cohabiting young women through youth-friendly services and high-quality digital FP information, strengthen postpartum and high-parity FP delivery, and fully integrate contraceptive services into universal health coverage and primary health care systems. Addressing unmet need will also require sustained investments in female education, targeted communication campaigns, and context-specific interventions to reduce regional and urban disparities. For researchers, these findings highlight the importance of examining how empowerment, digital exposure, and service readiness interact to shape contraceptive outcomes. Without coordinated, equity-focused action, UNC will continue to undermine reproductive autonomy and broader health and development goals across the region.

Conflict of interest

The authors have none to declare.

Author contributions

Conceptualization: TOM, MAI, TOA, BOI, RDA, TFO; Data curation: TOM; Formal analysis: TOM; Methodology: TOM, MAI, TOA, BOI, RDA, TFO; Supervision: TOM, MAI, TFO, RDA; Visualization: TOM, TOA, BOI, TFO; Writing – original draft: TOM, MAI, TOA, BOI, RDA, TFO; Writing – review & editing: TOM, MAI, TOA, BOI, RDA, TFO. All authors approved the final draft.

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