

Prevalence and factors associated with modern contraceptive discontinuation among women of reproductive age (15-49) in Burera District in Rwanda.

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Abstract

Background: Modern contraceptive discontinuation remains a major public health concern because it increases the risk of unintended pregnancies, unsafe abortions, and maternal and infant morbidity and mortality. Despite increased contraceptive uptake in Rwanda, discontinuation remains a challenge, particularly in rural areas. This study assessed the prevalence and factors associated with of modern contraceptive discontinuation among women of reproductive age in Burera District, Rwanda.

Methods: A cross-sectional study was conducted among 398 women of reproductive age who had used modern contraceptive methods. Data were collected using a structured questionnaire and analyzed using SPSS version 25. Descriptive statistics summarized participant characteristics. Chi-square tests assessed associations between variables and contraceptive discontinuation. Logistic regression was used to estimate crude and adjusted odds ratios (AORs) with 95% confidence intervals (CIs).

Results: The prevalence of modern contraceptive discontinuation was 33.4% (95% CI: 28.9–38.2). Women from households with a monthly income above 50,000 RWF had significantly lower odds of discontinuation than those earning 0–50,000 RWF. Women with five or more children were more likely to discontinue contraception (AOR=4.16; 95% CI: 1.17–14.78), while those who wanted no more children were less likely to discontinue use (AOR=0.37; 95% CI: 0.18–0.75). Women who did not receive family planning counselling had higher odds of discontinuation (AOR=3.44; 95% CI: 1.33–8.93). The main reasons for discontinuation were the desire to become pregnant (46.6%), side effects (27.1%), and fear of side effects (10.5%).

Conclusion: Modern contraceptive discontinuation remains substantial in Burera District and is influenced by household income, parity, fertility intentions, and family planning counselling. Strengthening counselling services and addressing contraceptive side effects may improve contraceptive continuation and reproductive health outcomes.

Keywords: Contraceptive discontinuation, Modern contraceptive, Associated factor, Rwanda

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INTRODUCTION

Modern contraceptive methods are essential for preventing unintended pregnancies, reducing maternal and infant mortality, and improving women's reproductive autonomy, while family planning contributes to socioeconomic development by enhancing household well-being and educational opportunities (Zimmerman et al., 2021). Globally, among the 1.9 billion women of reproductive age, approximately 1.1 billion require family planning services, with 874 million using modern contraceptive methods and 164 million having an unmet need for contraception (WHO, 2023). Despite these benefits, contraceptive discontinuation remains a major challenge, with more than one-third of users discontinuing within the first year, often due to side effects, method-related concerns, or dissatisfaction with services (Yifru et al., 2020; WHO, 2024). In low- and middle-income countries, discontinuation rates remain high, estimated at 38% within 12 months, 55% within 24 months, and 64% within 36 months, with health concerns being the most common reasons for stopping use (Dadzie et al., 2022).

In Sub-Saharan Africa, although modern contraceptive use has increased, discontinuation rates remain among the highest globally, influenced by factors such as side effects, method dissatisfaction, inadequate counselling, younger age, and limited contraceptive choices (WHO, 2023; Belete et al., 2018). Regional studies have reported varying discontinuation rates, including 37% within 24 months in Kenya and 32.3% within 12 months among adolescents in Tanzania (Kungu et al., 2022c; Solomon et al., 2025).

In Rwanda, modern contraceptive use has improved, with 58% of women using modern methods; however, unmet need for family planning persists, particularly among certain groups (National Institute of Statistics of Rwanda (NISR), Ministry of Health (MoH), & ICF, 2021). Contraceptive discontinuation, especially when not followed by switching to

another method, increases the risk of unintended pregnancies and may contribute to unsafe abortions and poor maternal and child health outcomes (Kupoluyi et al., 2023). According to the Rwanda DHS 2019–20, approximately 30% of women who initiated modern contraceptive methods discontinued within 12 months, mainly due to side effects and health-related concerns. However, limited evidence exists regarding contraceptive discontinuation and its associated factors in Burera District. Therefore, this study aims to determine the prevalence and factors associated with modern contraceptive discontinuation among reproductive-age women in Burera District, Rwanda.

The add value of this study to the science

This study:

- First, it will generate context-specific evidence on the prevalence of modern contraceptive discontinuation among women of reproductive age in Burera District, a predominantly rural setting in Rwanda where such data have previously been limited.
- Second, it will identify the socio-demographic, reproductive, contraceptive-related, and health-service factors independently associated with discontinuation in this population, addressing an important gap in the local evidence base.
- Third, by linking discontinuation to modifiable factors such as counselling and side-effect management, the findings will provide an empirical basis for designing equitable, client-centered family planning interventions to reduce unmet need for family planning and support continued contraceptive use in Burera District and similar rural setting.

METHODS

Study Design

This research used a cross-sectional study to assess the prevalence and associated factors of modern contraceptive discontinuation among

women in reproductive age in Burera District, Rwanda from 1 to 31 January 26 (Setia et al., 2016).

Study Settings and Population

The study was conducted in Burera District, one of the five districts of the Northern Province of Rwanda. The district is predominantly rural, with approximately 90.1% of the population living in rural areas. According to the Burera District profile (Burera District, 2022), Burera District has a total population of 404,538 people, including approximately 106,394 women of reproductive age (15–49 years). The district is in Rwanda near Uganda border and was selected as the study setting to assess the prevalence and factors associated with modern contraceptive discontinuation among women of reproductive age.

Inclusion criteria

The study population comprised women aged 15–49 years residing in Burera District who had used a modern contraceptive method within the five years preceding the study and had either continued or discontinued its use within the 12 months prior to data collection were particularly considered eligible for assessing factors associated with discontinuation. This approach ensured that participants were willing to participate and were able to provide accurate and relevant information aligned with the study objectives.

Exclusion criteria

Women who were excluded from the study included those outside the reproductive age group (15–49 years), as well as women who had never used modern contraceptive methods. Additionally, women who were seriously ill or otherwise unable to respond to the data collection tools were excluded, along with those who declined to participate in the study, ensuring that only eligible and willing participants contributed to the research.

Sample Size and Sampling

The sample size for this study was determined using the Yamane formula (Ahmed, 2024). Based on this calculation, a final sample of 398 women of reproductive age who had discontinued modern contraceptive methods in Burera District, Rwanda, in 2025 was obtained. To minimize non-response bias, the questionnaire was kept brief, and participants were informed about the potential benefits of their participation, including improved accessibility to family planning services based on the study findings (Makwana et al., 2023; Saraswathy et al., 2023; Ahmed, 2024).

$$n = \frac{N}{1 + N(e)}$$

n is the sample size; **N** is the population size, and **e** is the level of precision

$$n = \frac{104384}{1 + 104394(0.05)^2} = 398$$

A stratified random sampling technique was employed to select study participants (Kothari, 2004). The sampling frame consisted of all eligible households in Burera District with women aged 15–49 years who had used modern contraceptive methods and met the study inclusion criteria. The 19 health center catchment areas in Burera District were considered as sampling strata, and the calculated sample size was proportionally allocated to each stratum based on the estimated number of eligible women. If a selected household had no eligible participant or an eligible woman declined participation, another eligible household was randomly selected and recruited until the required sample size was reached.

The dependent and independent variable of this study

Independent variable in this study was modern contraceptive discontinuation, measured as a binary outcome and coded as 1=discontinuation and 0=continued use. Women were classified as having discontinued contraceptive if they reported stopping the use of modern contraceptive method during the study reference period while they were still at risk of pregnancy and did not intend to conceive immediately. Women who were actively using a modern contraceptive method at the time of survey or who switched directly from one modern method to another without interruption were classified as continuing users. The independent variables comprised sociodemographic characteristics (age, marital status, education, occupation, religion, and household income), reproductive health factors (parity, number of living children, and fertility preference), contraceptive related factors (types of method, duration of use, and side effects) and health service-related factors (family planning counselling, and partner support). To determine factors independently associated with contraceptive discontinuation, bivariate logistic regression was initially performed, and variables with a p -value < 0.05 , together with variable considered epidemiologically important based on previous literature, were entered into the multivariable logistic regression model to adjust for potential confounding. Adjusted Odds ratio (AORs) with 95% confidence intervals (CIs) were used to estimate the strength of associations, and the model statistical significance was declared using the Hosmer-Lemeshow goodness-of-fit test, where a p -value greater than 0.05. Multicollinearity was assessed using VIF, with values ≤ 5 indicating no significant collinearity. (Kothari, 2004).

Study instruments.

In this study, the researcher used adapted from a previous study to suit the Rwandan context. and structured questionnaires developed by

referring to related literatures (Kisuza et al., 2023; Kungu et al., 2022c; Solomon et al., 2025). Self-developed questionnaire was set out to gather socio-demographic and economic variables, fertility related factors and method related factors, knowledge and quality of service reported modern contraceptive discontinuation in women within reproductive age. The content of the questionnaire was further informed by evidence on contraceptive knowledge and decision-making (Pazol et al., 2015) and by health behavior theory relevant to perceptions of service quality and counselling (Jones et al., 2015). Closed questions were and key informant interview was used as data collection instruments. The questionnaire was written in English and then questions were translated in Kinyarwanda. The Data collection tools were developed based on the research questions and literature.

Validity and reliability of the instrument

To ensure that the research instrument was clear and accurately measured the intended variables, the questionnaire was pre-tested in the neighboring Musanze District, Northern Province (Zohrabi, 2013). The pre-test focused on women who had discontinued modern contraceptive methods and helped assess the clarity, relevance, and appropriateness of the questionnaire before the actual data collection. The Content Validity Index (CVI) was used to assess the content validity of the research instrument. Experts reviewed the questionnaire items for relevance, clarity, and alignment with the study objectives. The CVI was calculated as the proportion of items rated as relevant by the experts. A CVI value of 0.80 or higher was considered acceptable, indicating that the instrument had adequate content validity. Cronbach's alpha coefficient was also calculated to assess the reliability of the questionnaire scales. A value of 0.70 or higher was considered acceptable for internal consistency. Items with low item-total correlations were reviewed and revised to improve reliability. Feedback from the pre-test

was also used to refine the wording and structure of the questions, enhancing clarity and comprehension before actual data collection.

Statistical analysis

The data were coded, cleaned, entered, and analyzed using SPSS v25. The sociodemographic characteristics of mothers were described using frequencies and percentages for categorical data. The proportion of women in reproductive age (15–49 years) who discontinued modern contraceptives was coded as Yes=1 and women who didn't discontinue as No=0 and were reported with 95% confidence intervals. Cross-tabulation (chi-square test) was used to identify independent variables that were statistically significantly associated with contraceptive discontinuation ($p\text{-value} < 0.05$). These significant variables were then included in a logistic regression model for multivariate analysis to determine the adjusted odds ratios and identify the independent variables that were truly associated with the dependent variable.

RESULTS

The findings show that most respondents were aged 20–34 years (63.8%), while only 3.0% were adolescents aged 15–19 years. Most respondents were married (85.9%), and nearly two-thirds had primary education (62.3%). Regarding economic status, the largest proportion of households fell within the 51,000–150,000 RWF income category (36.7%), followed closely by the 0–50,000 RWF category (35.7%). More than half of respondents belonged to Ubudehe Category II (54.5%). In relation to reproductive characteristics, most women had 2–4 children (63.6%), and about two-thirds (67.1%) reported that they still wanted another child. Most respondents were using long-acting contraceptive methods (77.4%), and the majority had used their method for 13 months or more (75.9%). Nearly all respondents (94.7%) reported that they had received counselling.

Table 1. Socio-demographic and reproductive characteristics of respondents among women of reproductive age (15-49) in Burera District, Rwanda 2025 (N = 398).

VARIABLE	CATEGORY	FREQUENCY	PERCENT
Respondent age group	15–19	12	3.0
	20–34	254	63.8
	35–44	112	28.1
	45+	20	5.0
Partner age group	<35 years	232	58.3
	35+ years	166	41.7
Marital status	Single	48	12.1
	Married	342	85.9
	Separated	8	2.0
Education level	None	27	6.8
	Primary	248	62.3
	Secondary	101	25.4
	Higher	22	5.5
Income level (RWF)	0–50,000	142	35.7
	51,000–150,000	146	36.7
	151,000–200,000	74	18.6
	201,000+	36	9.0

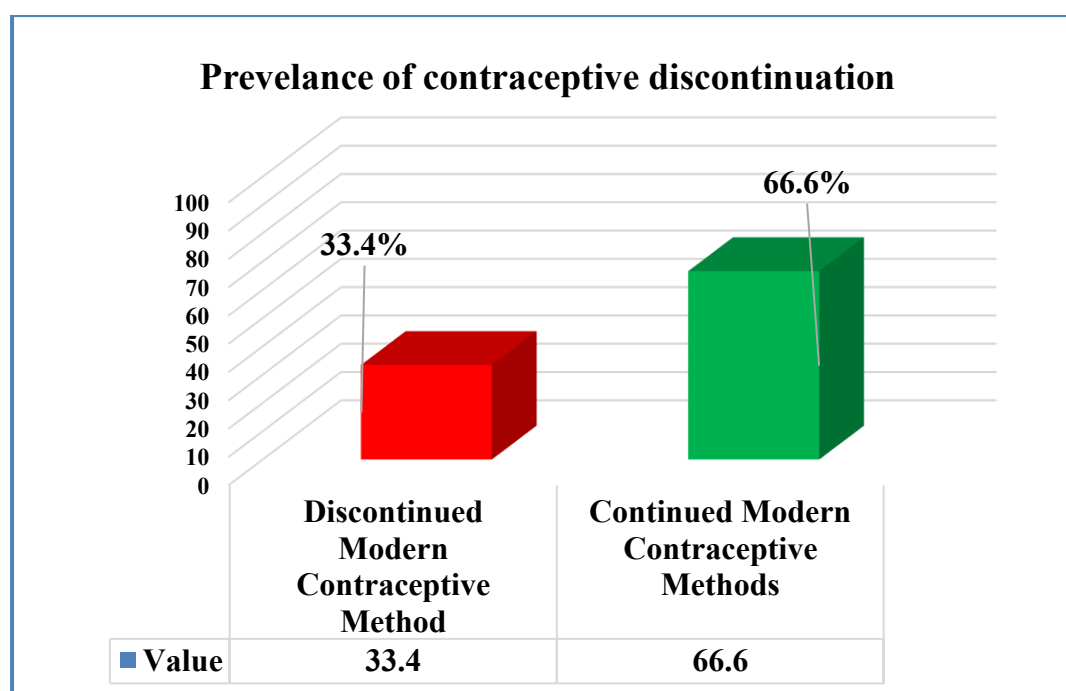
Ubudehe category	Category I	27	6.8
	Category II	217	54.5
	Category III/IV	154	38.7
Number of children	None	28	7.0
	One child	90	22.6
	2–4 children	253	63.6
	5+ children	27	6.8
Fertility preference	Want another child	267	67.1
	Undecided	47	11.8
	Want no more children	78	19.6
Method type	Sterilized	6	1.5
	Short-acting methods	90	22.6
	Long-acting methods	308	77.4
Duration of use	≤6 months	15	3.8
	7–12 months	81	20.4
	≥13 months	302	75.9
Received counselling	Yes	377	94.7
	No	21	5.3

Source: Researcher, 2025

Figure 1 displays the prevalence of modern contraceptive discontinuation which was 33.4% (95% CI: 28.9%–38.2%). This means

that approximately one in three respondents reported having discontinued a modern contraceptive method.

Figure 1: Prevalence of Contraceptive discontinuation among women of reproductive age (15-49) in Burera District, Rwanda 2025.



Source: Researcher 2025

Table 2 presents the crude and adjusted associations between socio-demographic

characteristics and modern contraceptive discontinuation. At the bivariate level, income

level was the only socio-demographic factor significantly associated with modern contraceptive discontinuation ($p < 0.001$).

Women in lower-income households had a substantially higher proportion of discontinuation compared to those in higher-income categories.

Table 2: Bivariate Analysis of Socio-demographic Factors Associated with Modern Contraceptive Discontinuation among women of reproductive age (15-49) in Burera District, Rwanda 2025. (N = 398)

Variable	Category	Discontinued n (%)	Continued n (%)	χ^2	p-value
Respondent age group	15–19	5 (41.7)	7 (58.3)	4.52	0.21
	20–34	80 (31.5)	174 (68.5)		
	35–44	39 (34.8)	73 (65.2)		
	45+	9 (45.0)	11 (55.0)		
Partner age group	<35 years	75 (32.3)	157 (67.7)	0.29	0.59
	≥35 years	58 (34.9)	108 (65.1)		
Marital status	Single	18 (37.5)	30 (62.5)	1.02	0.6
	Married	112 (32.7)	230 (67.3)		
	Separated	3 (37.5)	5 (62.5)		
Education level	None	10 (37.0)	17 (63.0)	2.86	0.41
	Primary	85 (34.3)	163 (65.7)		
	Secondary	30 (29.7)	71 (70.3)		
	Higher	8 (36.4)	14 (63.6)		
Income level (RWF)	0–50,000	70 (49.3)	72 (50.7)	38.64	<0.001
	51,000–150,000	40 (27.4)	106 (72.6)		
	151,000–200,000	13 (17.6)	61 (82.4)		
	≥201,000	10 (27.8)	26 (72.2)		
Ubudehe category	Category I	12 (44.4)	15 (55.6)	2.63	0.27
	Category II	68 (31.3)	149 (68.7)		
	Category III/IV	53 (34.4)	101 (65.6)		

Source: Researcher 2025

Although variations in discontinuation were observed across respondent age groups, marital status, education level, partner age, and Ubudehe category, these

differences were not statistically significant ($p > 0.05$).

Table 3 presents the bivariate associations between reproductive and method-related characteristics and modern contraceptive discontinuation using the Chi-square test.

Variables that were statistically significant at this level were considered for inclusion in the multivariable logistic regression model.

Table 3: Bivariate Analysis of Reproductive and Method-Related Factors Associated with Modern Contraceptive Discontinuation among women of reproductive age (15-49) in Burera District, Rwanda 2025. (N = 398)

Variable	Category	Discontinued n (%)	Continued n (%)	χ^2	p-value
Number of children	None	5 (17.9)	23 (82.1)	9.72	0.021
	One child	30 (33.3)	60 (66.7)		
	2–4 children	78 (30.8)	175 (69.2)		
	5+ children	20 (74.1)	7 (25.9)		
Fertility preference	Want another child	100 (37.5)	167 (62.5)	9.84	0.02
	Undecided	16 (34.0)	31 (66.0)		
	Want no more children	15 (19.2)	63 (80.8)		
	Sterilized	2 (33.3)	4 (66.7)		
Method type	Short-acting methods	31 (34.4)	59 (65.6)	0.07	0.785
	Long-acting methods	102 (33.1)	206 (66.9)		
Duration of use	≤6 months	5 (33.3)	10 (66.7)	2.01	0.366
	7–12 months	26 (32.1)	55 (67.9)		
	≥13 months	102 (33.8)	200 (66.2)		
Counselling	Yes	119 (31.6)	258 (68.4)	7.54	0.006
	No	14 (66.7)	7 (33.3)		

Source: Researcher 2025

At the bivariate level, number of children ($\chi^2 = 9.72$, $p = 0.021$), fertility preference ($\chi^2 = 9.84$, $p = 0.020$), and counselling status ($\chi^2 = 7.54$, $p = 0.006$) were significantly associated with modern contraceptive discontinuation. Women with five or more children had the highest proportion of discontinuation (74.1%) compared with those with fewer children.

Similarly, women who wanted no more children had a lower discontinuation rate (19.2%) than those who wanted another child (37.5%). Furthermore, discontinuation was markedly higher among women who did not receive counselling (66.7%) compared with those who received counselling (31.6%). These findings suggest that parity, fertility preference,

and counselling are important factors influencing modern contraceptive discontinuation.

Table 4 summarizes the main reported reasons for contraceptive discontinuation and the commonly reported side effects among respondents who discontinued contraceptive use.

Table 4: Reasons for discontinuation and reported side effects among women who discontinued contraception (n = 133).

Variable	Category	Frequency	Percent
Reasons for discontinuation	Wanted pregnancy	62	46.6
	Side effect from birth control	36	27.1
	Fear of side effects	14	10.5
	Partner disapproved	6	4.5
Reported side effects	Heavy bleeding	25	18.8
	Headache	20	15.0
	Irregular bleeding	19	14.3
	Decreased libido	14	10.5
	Amenorrhea	11	8.3

Source: Researcher 2025

Among the 133 women who discontinued contraception, the leading reason for discontinuation was the desire to become pregnant (46.6%), followed by side effects from birth control methods (27.1%) and fear of side effects (10.5%). Among reported side effects, heavy bleeding (18.8%) was the most common, followed by headache (15.0%) and irregular bleeding (14.3%). These findings indicate that both fertility intentions and

contraceptive side effects were key factors influencing discontinuation.

Table 4 presents the multivariable logistic regression analysis of the socio-demographic, reproductive, and method-related factors associated with modern contraceptive discontinuation. The model included variables that were statistically significant at the bivariate level and those considered theoretically relevant.

Table 4: Multivariable Logistic Regression Analysis of Factors Associated with Modern Contraceptive Discontinuation among women of reproductive age (15-49) in Burera District, Rwanda 2025.

Variable	Category	AOR (95% CI)	p-value
Income level (RWF)	0–50,000	Ref.	
	51,000–150,000	0.45 (0.26–0.77)	0.003
	151,000–200,000	0.07 (0.03–0.19)	<0.001
	≥201,000	0.13 (0.04–0.44)	0.001
Number of children	None	Ref.	
	One child	1.58 (0.54–4.63)	0.404
	2–4 children	1.25 (0.46–3.45)	0.662
	5+ children	4.16 (1.17–14.78)	0.027

Fertility preference	Want another child	Ref.	
	Undecided	0.86 (0.42–1.73)	0.667
	Want no more children	0.37 (0.18–0.75)	0.006
	Sterilized	0.50 (0.07–3.72)	0.502
Counselling	Yes	Ref.	
	No	3.44 (1.33–8.93)	0.011

Source: Researcher 2025

In the multivariable logistic regression analysis, income level, parity, fertility preference, and counselling status remained significantly associated with modern contraceptive discontinuation. Compared with women in the lowest income category (0–50,000 RWF), those in higher income groups had significantly lower odds of discontinuation. Specifically, respondents earning 51,000–150,000 RWF were 55.3% less likely to discontinue contraceptive use (AOR = 0.45, 95% CI: 0.26–0.77, $p = 0.003$). This protective effect was even more pronounced among those earning 151,000–200,000 RWF, who had a 92.9% reduction in the odds of discontinuation (AOR = 0.07, 95% CI: 0.03–0.19, $p < 0.001$). Similarly, women in the highest income category ($\geq 201,000$ RWF) had 87.0% lower odds of discontinuation compared with those in the lowest income group (AOR = 0.13, 95% CI: 0.04–0.44, $p = 0.001$). Regarding reproductive and method-related factors, women with five or more children were more likely to discontinuing contraception, while those who wanted no more children were less likely to discontinue than women desiring another child. Additionally, women who did not receive family planning counselling had more than three times higher odds of discontinuation, underscoring the importance of counselling in promoting continued contraceptive use.

Discussion of Research Findings

The present study found that 33.4% of women had discontinued modern contraceptive use. This finding is consistent with evidence from several studies conducted in different countries. In Rwanda, the 2019–2020 Rwanda

Demographic and Health Survey (RDHS) reported that approximately 30% of women discontinue a contraceptive method within 12 months of use, which is comparable to the prevalence observed in this study (National Institute of Statistics of Rwanda, 2020).

Similar prevalence levels have been reported in other countries in Sub-Saharan Africa. For instance, a study conducted in Ethiopia reported a contraceptive discontinuation rate of 27.1% within the first year of use (Ayele et al., 2024). Likewise, research carried out in Kenya found that about 36% of women discontinued contraceptive use within 12 months. Another study conducted in Nigeria also reported that approximately 34% of women discontinued contraception within one year of initiation (Kungu et al., 2022).

The similarity between the findings of this study and those reported in Ethiopia, Kenya, and Nigeria suggests that contraceptive discontinuation remains a common challenge across many low- and middle-income countries. These patterns may reflect common underlying factors such as side effects, fertility intentions, and access to family planning services.

However, lower discontinuation rates have been reported in some countries with stronger health systems. For example, studies conducted in Bangladesh have reported lower discontinuation rates, partly attributed to improved family planning counselling and follow-up services (Mahumud et al., 2015). The slightly higher levels of discontinuation observed in rural settings such as Burera

District may therefore be influenced by differences in access to health services and quality of family planning counselling.

Interpreted in context, a discontinuation prevalence of 33.4% is substantial from a public health standpoint, as roughly one in three women who had initiated a modern method were no longer protected at the time of the study. Because most discontinuers in this population were still fecund and many did not wish to conceive immediately, the finding signals were an important source of unmet need and a plausible contributor to unintended and mistimed pregnancies in the district. The close agreement between this district-level estimate and the national RDHS figure indicates that the discontinuation challenge documented nationally persists in rural districts, and that increases in contraceptive uptake have not yet been translated into sustained use.

These findings align with a recent life-table analysis of the 2019–2020 RDHS, which reported cumulative discontinuation of 16.7% at 6 months, 29.3% at 12 months, and 47.2% at 24 months of use (Jean de Dieu & Lambert, 2024). The more recent 2020 RDHS further shows that modern contraceptive use remains higher in rural areas (65%) than in urban areas (61%) and that the national total fertility rate has fallen to 4.1 children per woman, underscoring the importance of sustaining method use if these gains are to be consolidated (National institute of statistics of Rwanda, 2020). Nonetheless, relatively few district-level Rwandan studies have quantified discontinuation, so the present findings add locally relevant evidence from a rural setting such as Burera.

Study Limitations

This study had several limitations. The cross-sectional design limited the ability to establish causal relationships between associated factors and contraceptive discontinuation. Self-reported data on contraceptive use and discontinuation may have been affected by

recall and social disability biases. Additionally, because the study was conducted only in Burera District, the findings may not be generalizable to other settings in Rwanda.

Study Implications

Based on these findings, family planning programs in Burera District and similar settings should strengthen the quality of counselling by ensuring that women receive clear information on contraceptive benefits, possible side effects, and available alternatives during initiation and follow-up visits. Training and supervision of community health workers and health care providers should be prioritized to improve counselling skills. In addition, services should be made more accessible for vulnerable women, especially those from low-income households, by reducing financial and access barriers through community outreach and integration with social support programs. Strengthening follow-up systems, including community-based support and reminder mechanisms, can help identify and support women at risk of discontinuation. Effective management of side effects and timely method switching should also be integrated into routine family planning services to promote continued contraceptive use.

CONCLUSION

Modern contraceptive discontinuation remains a significant public health concern among women of reproductive age in Burera District, affecting approximately one-third of users. Household income, parity, fertility preference, and family planning counselling were the significant factors associated with discontinuation: higher income, a smaller desired family size, and receipt of counselling were linked to lower discontinuation, whereas higher parity was linked to greater discontinuation. These findings underscore the critical role of comprehensive counselling in sustaining contraceptive use.

The Ministry of Health and Burera District should strengthen access to high-quality, client-centered family planning services, community-based education, and follow-up systems to address barriers to continued use. Providers should deliver comprehensive counselling at initiation and follow-up, covering side effects, their management, and alternative methods. Future research should use longitudinal or qualitative designs to further explore method-specific, health-system, and socio-cultural determinants of discontinuation.

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Author contributions

EK conceptualized and designed the study, developed the research protocol, supervised data collection, performed data analysis, interpreted the findings, and drafted the manuscript. He also participated in study design, data collection, data cleaning, and manuscript writing. EK contributed to data analysis, interpretation of results, and critical review of the manuscript. CN participated in proofreading, reviewed the final manuscript, and approved it for publication.

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Ethics approval and consent to participate

Ethical approval to conduct this study was obtained from the Faculty of Public Health, Mount Kenya University with Ethical approval number: MKU04/ERC/0605. Permission to collect data was granted by Burera District administration. Before data collection, the purpose of the study was clearly explained to all participants, and written informed consent was from participants. Participation was entirely voluntary, and participants were informed of their right to withdraw from the study at any time without any consequences. To ensure confidentiality and anonymity, no participant's names were recorded on the questionnaires. We used code as unique identifiers. All completed questionnaires were securely stored and accessible only to the research team. The information collected was treated with strict confidentiality and was used solely for academic and research purposes.

Competing interests

The authors declare no competing interests.

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