Demand for Contraception after self –Managed Medical Abortion: The case of Nakuru County

Article *in* International Journal of Business and Social Science · June 2025

DOI: 10.30845/ijbss.vol16p4

2 authors:

Steve Biko Sigu
Kenyatta University
5 PUBLICATIONS **7** CITATIONS
SEE PROFILE

Francis omondi Ouma
Kenyatta University
2 PUBLICATIONS **0** CITATIONS
SEE PROFILE

International Journal of Business and Social Science
ISSN: 2219-1933 (Print), 2219-6021 (Online)

BRPI

Original Article | Open Access

Demand for Contraception after Self -Managed Medical Abortion: The Case of Nakuru County, Kenya

Steve Biko Sigu[1] MA and Francis Omondi[2] PhD

[1] Department of Economic Theory. Kenyatta University; sigusteve@gmail.com.

[2] Department of Applied Economics. Kenyatta University; Omondi.francis@ku.ac.ke.

ORCID iD:

[1] https://orcid.org/0009-0003-8609-633X
[2] https://orcid.org/0000-0001-7542-1182

Address for Correspondence:

Steve Biko Sigu, Department of Economic Theory. Kenyatta University. (sigusteve@gmail.com)

Article History:

Received: 18 April 2025; Accepted: 23 May 2025; Published: 2 June 2025

Abstract This study examined demographic and socioeconomic determinants of post-medical abortion contraceptive demand using data from 401 women who obtained medical abortion drugs at 21 pharmacies in Nakuru, Kenya, as part of the PMAC project pilot. A probit model was used to identify key factors. Although 60% of women initially chose to bundle abortion drugs with contraceptives, only 43% used contraception after self-managed abortion. Socioeconomic factors such as effective demand, exposure to contraceptive promotional interventions, abortion decision-making, and prior contraceptive use significantly influenced post-abortion contraceptive uptake, alongside demographic factors like age, marital status, and education level. The findings highlight the multifaceted nature of contraceptive decision-making following self-managed abortion, shaped by both individual and contextual factors. The study concludes that aligning decision-support strategies and targeted interventions may help increase contraceptive use post-abortion, informing policy and programmatic approaches in similar contexts.

Keywords Medication Abortion, demand for contraception, community pharmacies, post medication abortion contraception and modern contraceptive prevalence rate

Volume 16, 2025

Publisher: The Brooklyn Research and Publishing Institute, 442 Lorimer St, Brooklyn, NY 11206, United States.

DOI: 10.30845/ijbss.vol16p4

Reviewers

Dr. Limor Rimer, Department of Obstetrics and Gynecology, Maccabi Health Services, Israel; ORCID iD: https://orcid.org/0000-0001-5027-5115; Email: rimerl@gmail.com.

Ziyad Hazim Ibrahim, Public Health Directorate, Iraqi MoH, Iraq; ORCID iD: 0000-0002-4432-0247; Email: drziyad2005@gmail.com; Phone Number: 00964-7901998801.

Citation: Sigu, S. B., & Omondi, F. (2025). Demand for Contraception after self -Managed Medical Abortion: The case of Nakuru County, Kenya. *International Journal of Business and Social Science*, *16*, 56-68. https://doi.org/10.30845/ijbss.vol16p4

1.0 Introduction

Low and middle-income countries continue to face persistent challenges with unintended pregnancies, leading to rapid population growth and increased incidences of unsafe abortion (Yazdkhasti et al., 2015).These challenges impose significant socioeconomic burdens, yet they also present opportunities to improve access to modern contraception for women and girls who wish to manage their fertility. Investing in contraception yields health, social, and economic benefits (Starbird, Norton and Marcus, 2016).Contraception is crucial for achieving Global Sustainable Development Goal (SDG) 3.1, which aims to reduce the maternal mortality ratio from the current 197 maternal deaths per 100,000 live births to fewer than 70 mortalities per 100,000 live births as desired by SDGs 3.1 for sustainable development (Khalil et al., 2023; United Nations , 2015).Beyond effectively reducing unintended pregnancies and maternal deaths due to pregnancy risks and unsafe abortion complications (Askew et al., 2024), contraceptives empower women to control the number and spacing of their children, thereby managing population growth. Globally, contraceptives have demonstrated clear health benefits. In 2022 alone, the use of modern contraceptive methods prevented over 141 million unintended pregnancies, averted approximately 29 million unsafe abortions, and significantly reduced maternal mortality, saving nearly 150,000 lives.(Track20, 2022).To sustain better health outcomes, the World Health Organization recommends that contraceptive services be educational and comprehensive, allowing for the re-evaluation of women's needs over time and addressing specific evolving need(World Health Organization, 2015)

Improving access to contraception can significantly benefit countries by managing population growth (Speizer & Lance, 2015), which in turn supports economic and national development. By promoting planned pregnancies and appropriate birth intervals, contraception enables households to better allocate resources for education, health and meet their economic needs. This can lead to higher savings rates and improved quality of life at both household and national levels due to more manageable population growth. Conversely, sustained rapid population growth poses challenges for developing countries, straining public expenditure and undermining efforts to provide universal health care, eradicating poverty, ending hunger and malnutrition(Wilmoth et al., 2022). Beyond empowering women to reach their fullest potential in education (Starbird et al., 2016b) , empirical studies indicate that slower population growth reduces the costs associated with basic needs like education and sanitation. Furthermore, meeting women's needs for family planning enhances their educational and career opportunities, boosting economic growth(Singh S, 2012) .

A rapidly growing population often results in increased resource consumption and greenhouse gas emissions, contributing to climate change (Guzmán, 2009). Climate change is considered a significant threat to economic development, especially for low- and middle-income countries, as it disrupts critical sectors like agriculture and tourism. Investing in programs that promote and expand contraception services can help manage rapid population growth, a key driver of climate change. By improving the use of modern contraception, women are empowered to determine the number, timing, and spacing of their pregnancies. This not only helps manage household fertility trends but also contributes to reducing greenhouse gas emissions, thereby helping to slow down climate change (Bongaarts & Sitruk-Ware, 2019).

Kenya underscores the critical role that contraceptives play in enhancing health, social stability, and economic development. The country has established a comprehensive national contraception program in collaboration with various stakeholders to develop and implement policies and strategies aimed at increasing the modern contraceptive prevalence rate (mCPR), reducing maternal mortalities rates (MMR) and total fertility rate (TFR)(Aloo et al., 2023). These strategies, along with the expansion of contraceptive services in the private sector, have significantly improved contraceptive coverage in the last decade, increasing MCPR from 53% to the current 57%. As a result, the total fertility rate has decreased from 4.5 live births per woman to 3.5, and the maternal mortality rate has significantly reduced to 149 per 100,000 live births(WHO et al., 2025).Despite considerable progress in enhancing contraceptive coverage in Kenya, there remains a considerable unmet need for contraception. Kenya's modern contraceptive prevalence rate (mCPR) does not meet the universal coverage objectives and Sustainable Development Goals, which aim for an mCPR of 64% among married women by 2030 and a maternal mortality rate (MMR) of 70 per 100,000 live births (United Nations, 2022) Furthermore, Kenya's total fertility rate (TFR) exceeds the global average of 2.2 births per woman.

In Kenya, a significant unmet need for contraception results in 49% of all pregnancies being unplanned each year. Of these unplanned pregnancies, approximately 41% end in induced abortion, resulting in an estimated 464,000 induced abortions annually (Singh et al, 2013). In Kenya, abortion is permitted only to save the life of the mother (Government of Kenya (GOK), 2010).The inclusion of medical abortion drugs like misoprostol and mifepristone in Kenya's essential drug list has improved access through lower-tier healthcare channels(Kenya Ministry of Health, 2023).Additionally, the implementation of WHO self-care guidelines has empowered healthcare workers to support self-managed abortions, making community pharmacies a key access point for medical abortion (Ouma et al., 2023).However, there is still limited information about post-medical abortion contraceptive use in community pharmacies. These challenges primarily stem from the nature of pharmacists and pharmaceutical technologists training in Kenya, which is heavily focused on drug composition and the dispensing of medications, rather than on providing in-depth counseling to clients to promote demand (Reiss et al., 2016). Additionally, the business-oriented model of services provided by private pharmacists prioritize efficiency and profitability. This often aligns with the preferences of women seeking abortion services who value privacy and quick service over receiving detailed information. Consequently, this dynamic results in missed opportunities for essential contraceptive care following self-managed abortions that could lead to

another unintended pregnancy given the quick return to fertility (Liambila et al., 2010). Targeting women who have abortions using medication abortion pills from community pharmacies presents an opportunity to promote contraception demand and potentially improve the Modern Contraceptive Prevalence Rate (MCPR). This approach highlights why post-medical abortion contraception is considered a high-impact intervention in contraceptive care.

Despite the high impact of post-abortion contraception in contraceptive care, most studies on this topic in Kenya are facility-based, and there is limited empirical evidence on the demand for contraceptive use following self-managed medical abortions. Available research indicates that various individual characteristics and sociodemographic factors can influence the demand for contraceptives after a medical abortion. These factors include age, marital status, income level, number of children, decision-making autonomy, exposure to contraceptive promotion interventions, and cost studies (Cherono, 2013; Okech, 2010). For instance, Moges (Moges et al., 2018) found that previous contraceptive use history, the woman's education level, and marital status were significant factors in driving demand for contraception. Additionally, the study also found that women who accessed counselling interventions were 3.6 more likely to adopt a contraceptive method. Awoyemi and Novignon (Awoyemi & Novignon, 2014) in their facility-based study on demand for abortion and post abortion contraception found that a woman's income and education level were significant factors in determining demand for both abortion and postabortion care. Nyarko (Nyarko, 2020)observes significant associations between modern contraceptive use and socioeconomic factors such as marital status, employment, education attainment, religion, age, and parity. Further, Nyarko (Nyarko, 2020)emphasized that depending on the context of contraception service delivery, contraceptive promotion and convenient location of contraception service delivery points have considerable positive influence on contraceptive uptake. Magalona (Magalona et al., 2022) highlights those contraceptive interventions, including counseling provided during abortion care, aid in informed decision-making and promote contraceptive use after the procedure. However, the findings indicate that accessing abortion services from a formal clinical source is significantly linked with higher rates of contraceptive adoption and lower discontinuation rates. Finally, Benson's study of factors that promotes post abortion contraceptive use in Asia and Africa showed that contraception is a crucial component of quality comprehensive abortion care (Benson et al., 2018). It identifies factors such as age, type of abortion, and first-trimester abortions as key determinants of contraceptive use following an abortion. The findings also demonstrate that high contraception uptake is achieved when it is provided at the time of abortion, when a wide range of contraceptive options are available, and when follow-up support is offered to clients.

This study aimed to evaluate how socioeconomic and individual characteristics affect the demand for contraceptives through community pharmacies following self-managed medical abortions in Nakuru County. With the high prevalence of self-managed abortions through community pharmacies, it's essential to understand the demographic and socioeconomic factors influencing contraceptive uptake. This knowledge will be crucial for enhancing post-abortion contraceptive delivery through pharmacies to better meet women's needs. Additionally, it will support government agencies in strengthening their oversight of the private sector's contraceptive ecosystem, ultimately improving last-mile contraceptive coverage and maternal health outcomes.

2.0 Methods

2.1 Model Specification

The model used in this study was adopted from the random utility theory (McFadden & Marcel K. Richter, 1990) and Grossman's demand for health (Grossman, 1972) to make a theoretical explanation of demand for post medical abortion contraception. Similar model specifications have been utilized in empirical literature by researchers in establishing determinants of demand for contraception (Awoyemi & Novignon, 2014; Cherono, 2013; Okech, 2010). The model postulates that women are consumers of contraceptive commodities and the decision to use contraception following medical abortion is modelled as a function of price/cost of contraception, the individual socioeconomic factors and demographic characteristics of the woman. After a first-trimester abortion, women quickly regain fertility. If they do not use contraception when resuming sexual activity, they face an increased risk of unintended pregnancies, which can significantly impact their overall health stock. Investing in contraception is a preventive health measure to enable women manage their fertility, prevent unintended pregnancies and mitigate the need for future abortion (Grossman, 1972). Thus, the decision to use (demand)contraceptive following medical abortion can be represented by an indirect utility function as shown in equation 1 below.

$$Vj=f(Pj, Yj, Ej, Ij\ Sj\ Kj) \quad (1)$$

Where Vj is the indirect utility to represent use/demand for contraception by woman j. Pj represent the price of contraception service for woman j, Yj is the income of the woman, Ej is the effective demand which denotes when medical abortion drug is bundled with contraception at the time of pregnancy termination for woman j, Ij denotes the interventions promoting contraceptive use for the woman j seeking contraception , S denotes sociodemographic variables such as age, education level, marital status among other factors that influence woman j decision making, and K is any other variable not represented but influenced demand for contraceptive for woman j. Given these factors, women are rational in their decision making and seek to optimize utility from the use of contraception.

2.2 Empirical model

In this study the demand for contraceptive use following medical abortion was defined as the likelihood of using a contraceptive method following medical abortion and the empirical model for the study was fitted on the assumption that likelihood of a woman using a contraceptive method immediately after a medical abortion is believed to depend on several factors such as contraceptive promotional intervention targeting woman seeking medical abortion, effective demand which is a proxy bundling contraceptive with medical abortion drugs at the point of medical abortion purchase, the actual age of the woman seeking medical abortion, marital status of the woman who is seeking medical abortion, highest education level of the woman seeking abortion, number of children alive, employment status, history of using contraception before index pregnancy , the log of the cost of medical abortion , income level of the woman seeking abortion and abortion decision making. The relationship between the likelihood of using a contraceptive method and the determined factors was represented in a linear equation as outlined below as outlined in Equation 2 below.

$$Yi=Xi\beta+\varepsilon i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Where Yi represent the demand for contraception following medical abortion for woman i whileXi is the various individual characteristics and socioeconomic factors that determine use of contraception following medical abortion and β is the coefficient of the various socioeconomic factors and individual characteristics that determine contraceptive use following medical abortion.

We fitted the specific variables that represented the individual characteristics and socioeconomic factors that influence demand for contraceptive use following self- managed medical abortion into equation 1 and obtained an expanded form of the linear equation 3 as presented below.

$$\text{Demand for PMAC} = (\beta 0+\beta 1\text{Inter}+\beta 2\text{EDD}+\beta 3\text{Age}+\beta 4\text{MS}+\beta 5\text{EDs}+\beta 6\text{NC}\ \beta 7\text{ES}+\beta 8\text{EUC}+\beta 9\text{ABD}+\beta 10\text{COA}+\beta 9\text{HH\_income}+\varepsilon) \quad (3)$$

In the equation *PMAC* is the proxy for demand for contraception following medical abortion, ***Inter*** is a proxy for contraceptive promotional intervention of the woman seeking medical abortion, ***EDD*** is effective demand which is a proxy bundling contraceptive with medical abortion drugs at the point of medical abortion purchase, **Age** is the actual age of the woman seeking medical abortion, **MS** is a proxy for marital status of the woman who is seeking medical abortion, **EDs** is a proxy for highest education level of the woman seeking abortion, **NC** is the proxy for number of children alive, **ES** is employment status, **EUC** is a proxy for ever use of contraception before index pregnancy , **COA** is the log of the cost of medical abortion while **HHI** is the income level of the woman seeking abortion. A detailed explanation of the variable's definition as well measurement and interpretation are provided in table 1

In this study, the demand for any short-term contraceptive method adopted by a woman following medical abortion was considered discrete. Either women use post medical abortion contraceptive (1), or they do not use contraceptive after medical abortion (0) thus a binary outcome. On this basis, the study adopted a probit model to estimate the likelihood of contraceptive use (demand) following a medical abortion. The chances of women using a contraceptive method following medical abortion is assumed to be dependent on several variables as expressed equation two below.

$$E(Y|X) = P(Y=1|X) = \Phi(\beta 1X+\varepsilon) \quad (4)$$

Where, P is the probability that a woman will use contraception following medical abortion, Yi denotes the dependent variable which is post medical abortion contraceptive use. β is the regression coefficient to be estimated and represent marginal effect of the independent variable on the dependent variable while Xi is the vector of the descriptive variables (individual characteristics and socioeconomic variables) that influences uptake of post medical abortion contraceptive, Φ is the standard normal distribution function and ε being the error term.

The study estimated and interpreted the marginal effect to determine the extent and sign of the coefficient of each independent variable. The marginal effect was obtained by differentiating equation 2 with respect to independent variables we get the probability density function as shown below in equation 5.

$$\partial PY=1\ X\partial Xk=\beta kc(X\beta) \quad (5)$$

$$\text{hence } c\cdot = \partial F(\cdot)/\partial C(X\beta)$$

Table 1: variable descriptions

Variable name	Variable description	When the variable was assessed	Expected coefficient sign
PMAC	Dummy variable for post medical abortion contraceptive use- Women reporting current FP use at the time of the survey which take 1 for use and 0 otherwise	Baseline data	Outcome/dependent variable
Inter	Exposure to contraceptive promotional intervention.1 if respondent heard about one of the three interventions at the point of MA purchase and 0 if otherwise.	Baseline data	Positive
EDD	Effective demand for contraception. 1 if respondent obtained contraception with medical abortion in the same pharmacy where MA was purchased and 0 if otherwise.	Baseline data	Positive
Age	Actual age of respondent categorized as	Baseline data	Negative
MS	Respondent marital status, categorized into single, married and separated.	Baseline data	Positive
EDs	Respondent highest educational level categorized as no education, primary education, secondary education and tertiary education.	Baseline data	Positive
NC	Respondents number of children alive categorized in 0-1 child, 2-3 children and 4+ children	Baseline data	Negative
ES	Respondent's employment status categorized as 1 employed and 0 if otherwise	Baseline data	Positive
EUC	Ever use of contraception is categorized as 1 if the respondent has ever used a contraception method and 0 if otherwise.	Baseline data	Positive
ABD	Women's decision making on abortion, categorized as self -made decision, joint with partner or peer supported decision.	Baseline data	Positive
COA	Log of cost of medical abortion,	Baseline data	Positive
HHW –	Respondent's Household wealth level computed using the Poverty Probability Index. In the study the HHW is categorized into high income household and low-income household based on wealth status.	Baseline data	Positive

2.3 Data

The data used for the analysis was drawn from the post medical abortion contraception (PMAC) project pilot survey in Nakuru county, targeting women who have self-managed medical abortion through pharmacy channels. The PMAC project is implemented in Nakuru county by Ipas in collaboration with Population Council and the Kenya Ministry of Health. Ipas collaborated with 21 pharmacies in Nakuru County to implement one of three contraception promotional interventions targeting women seeking abortion services. Nurse Nisa, a digital chatbot offering information on medical abortion and post-abortion contraception along with a referral list of pharmacies; a discount code intervention, which provided method-specific information and discounted pricing on contraception following medical abortion; and a peer support intervention, which offered personalized counseling and informational support on contraception after abortion. A description of these contraceptive promotion interventions is provided in table 2. 21 pharmacies were randomized into three intervention arms (7 pharmacies per arm), with each arm promoting contraceptive use following abortion through its unique approach. We utilized matched randomization based on subcounty and pharmacy Medical Abortion caseloads to ensure fair distribution of caseload across the pharmacies. Medical Abortion users were eligible for participation if they were aged 15-49 years and were married/cohabitating with their partner OR aged 18-49 years and unmarried OR aged 15-17 years and had assumed adult responsibilities (e.g., household headship, child-rearing, etc.) and purchased MA pills at one of the pharmacies included in the pilot. A total of 911 Medical abortion clients were assessed for eligibility and recruitment with only 401 consenting for participation in the study representing a 44% participation rate. Ipas trained 7 female research assistants who administered interviews at baseline targeting women at the point of Medical abortion purchase at pharmacy or within 7 days of MA purchase and a 30 day follow up interviews .The survey captured data on sociodemographic characteristics of participants, contraceptive use at pre-index pregnancy , experience at the pharmacy during medical abortion , exposure to contraceptive promotion intervention , contraceptive use following medical abortion , cost of abortion. Baseline data was used for the analysis of this study.

Table 2: Description of Pharmacy based contraception promotion intervention

Intervention name	Nurse Nisa	Peer support	Discount code
What it is	Nurse Nisa, a digital chatbot offering information on medical abortion and post-abortion contraception along with a referral list of pharmacies;	Pharmacists collaborate with community mobilizers to offer personalized counseling and informational support on contraception after abortion.	A discount code intervention, which provided method-specific information and discounted pricing on contraception following medical abortion; and
How it works	Pharmacists introduce the intervention at the point of MA purchase		
Goal	Promote demand /use of contraception following medical abortion		

2.4 Data processing, analysis and presentation

The data obtained from the PMAC project was reviewed to ensure accuracy and completeness, with special attention given to verifying that all fields were correctly captured. Missing values for variables were imputed using mean substitution, and log transformations were applied where appropriate. The dataset was then coded into Stata files. We conducted diagnostic tests—including the Breusch-Pagan test, correlation analysis, and the Shapiro-Wilk test—which indicated no significant issues with the data. Using Stata version 14, we performed a probit regression analysis and estimated the marginal effects of the explanatory variables to assess the relationship between demand for contraceptive services and individual characteristics as well as socioeconomic factors, in line with the study's objective. The results from the analysis were presented descriptively in tables, along with the marginal effect outputs.

2.5 Ethical Consideration

Ethical clearance for the PMAC project pilot study was obtained from Amref Ethics and Scientific Review Committee (ESRC) approval no ESRC P804/2020 and a research license from the National Commission for Science Technology and Innovation (NACOSTI), License no: NACOSTI/P/20/6757.The study obtained data use permission from Ipas and the Population Council for the analysis of the pilot data. Additionally, ethical clearance and a waiver of informed consent were granted by the Kenyatta University Ethics Review Committee under approval number PKU/3191/14013. A research permit was also obtained from NACOSTI under approval number NACOSTI/P/25/416028.

3.0 RESULTS

3.1 Descriptive statistics

A total of 401 women participated in the study, with the majority being young women (32%), followed by young adults (28%) while adult women, older women and adolescents accounted for 23%, 14% and 3% respectively. Among the participants, 51% were single, while 35% were married; the remaining 14% were either divorced, separated or widowed. Notably, 96% of the women were classified as having low-income status. Most study respondents reported having given birth to at least one child. Most respondents were engaged in income-generating activities through formal employment or personal businesses, while about 36% were not involved in any form of employment or income generation. Educational attainment varied, with 8% of the women having no formal education, 29% having completed primary education, 47% having completed secondary education, and 16% having attained tertiary education. Most respondents indicated that they made the decision to have an abortion independently, while 13% reported making the decision jointly with partners, and 3% reported being influenced by peers in their decision to terminate a pregnancy.

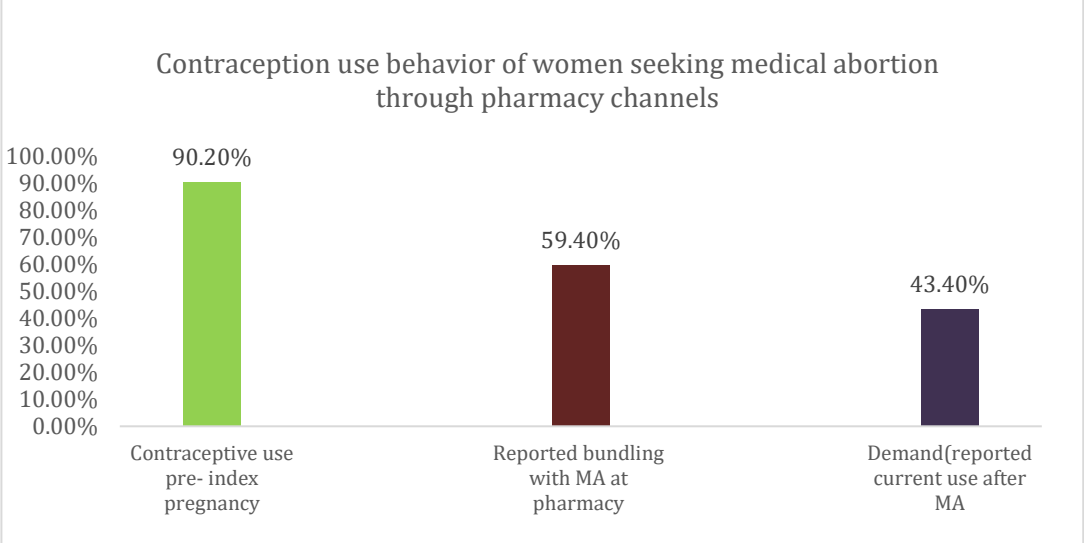
Table 3 presents the socio-economic and demographic characteristics of the 401 participants as well as the associated percentages of the variables used in the study.

Table 3 Descriptive statistics (N=401)

Demographic and Socioeconomic factors		Respondents	Percentage %
Age of women	Adolescents (10-19 Yrs)	11	3
	Young women (20-24 Yrs)	129	32
	Young Adults (25-29 Yrs)	112	28
	Adult Women (30-34 Yrs)	93	23
	Older Women (35+)	56	14
Marital status	Single women	204	51
	Married women	139	35
	Separated/Divorced	58	14
	Widows	2	5
Highest Education Status	No Education	32	8
	Primary Education	118	29
	Secondary Education	188	47
	Tertiary Education	63	16
Employment status	Not Employed	257	36
	Employment	144	64
Household Income	Low HH income	384	94
	High HH Income	17	4
Medical abortion decision making	Self	338	84
	Both (respondent and Partner)	50	13
	Other (peer influence)	13	3
Number of children alive	1- (0-1 child)	134	61
	2- (2-3 children)	243	32
	3- (over 4 children)	24	6
Effective Demand	Contraceptive bundled with MA	238	59
Exposure to Intervention	Contraceptive intervention	212	53
Cost of Abortion	Cost of medical abortion	Log of the cost	

3.2 Trends in Contraceptive use among women who self -manage medical abortion

Figure 1 below indicates that out of the women who purchased medical abortion (MA) drugs, 238 (60%) chose to bundle them with a contraceptive method at the time of purchase when offered. Pharmacists bundled MA with FP to sell additional products while the clients seeking MA. As shown in Table 3, only 174 (43%) women reported current use of contraceptive at baseline. Additionally, only 212 (53%) of the women reported being exposed to a contraception promotional intervention at the pharmacy during their MA drug purchase.



3.3 Demand for Post medical abortion contraception

Table 4 shows that five of the explanatory variables were statistically significant at 5% in explaining the variation in demand for contraception following medical abortion in Nakuru. Exposure to contraceptive intervention, Effective demand, marital status and abortion decision making were significant in explaining variation in demand for contraception following medical abortion at 1% significant levels. The coefficient of marginal effects of Effective demand, marital status and Abortion decision making were all positive while the coefficient of the exposure to the intervention was negative. Additionally, Age of the woman was significant in explaining variation in demand for contraception following medical abortion at 5% significance levels.

Table 3: Probit model of socioeconomic and demographic determinants of contraception following medical abortion

Dependent variable	Contraception following medical abortion					
Explanatory variables	**dy/dx**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
Intervention	*-0.2610789	0.041786	-6.25	0	-0.342977	-0.17918
Effective Demand for FP	*0.4855824	0.030388	15.98	0	0.426023	0.545142
Age	**-0.0582735	0.025068	-2.32	0.02	-0.107406	-0.00914
Marital status	*0.0842565	0.032876	2.56	0.01	0.019821	0.148693
Education status	***0.0524451	0.026893	1.95	0.051	-0.000264	0.105154
Number of Children alive	-0.0041112	0.044811	-0.09	0.927	-0.09194	0.083717
Employment status	-0.0096891	0.045735	-0.21	0.832	-0.099328	0.07995
Ever used a contraceptive method	***0.1378036	0.075015	1.84	0.066	-0.009222	0.284829
Abortion decision making	*0.1701999	0.04586	3.71	0	0.080316	0.260083
Cost of abortion	0.0135077	0.052495	0.26	0.797	-0.08938	0.116395
Household Income level	0.0497201	0.106304	0.47	0.64	-0.158631	0.258071
** Significance at 1% level while ** significance at 5% level*						

4.0 DISCUSSIONS

Based on the results of the marginal effect analysis, effective demand emerged as the most significant determinant of contraceptive use. The marginal effect of effective demand was 0.49, indicating that women who obtained both medical abortion drugs and a contraceptive method together were 49% more likely to report current use of contraception following medical abortion. Bundling a contraceptive method with medical abortion provides a convenient and accessible opportunity for women to discuss and initiate contraception immediately afterward. This is crucial, as fertility returns quickly following abortion, and starting contraception soon after can help prevent unwanted

pregnancies. Further, the significance of this practice has been supported by previous empirical studies such as Gemzell (Gemzell-Danielsson et al., 2014) and Argent (Kim et al., 2021) that suggest that safe abortion providers hold an ethical responsibility for provision of accurate information and offering multiple choices, but no pressure or obligation for uptake. This could help mitigate coercive contraceptive care especially for women seeking abortion through pharmacy channel. Although these are regional findings, the finding is further confirmed by recommendations by Kenya MOH (Kenya MOH, 2019) that aligns with the local context for post medical abortion contraception need.

Further, the study reveals that the second most important determinant of demand for contraception following medical abortion is exposure to contraceptive promotion interventions, with a marginal effect of -0.26. Although the negative association was unexpected, it suggests that women who were exposed to at least one contraceptive promotion intervention at the point of medical abortion were 26% less likely to use contraception afterwards. While such interventions are typically intended to increase contraceptive use, this unexpected result may be attributed to interventions not addressing women's specific post-abortion contraceptive needs and priorities. This finding aligns with (Mwadhi et al., 2023) study conducted in Kenya, which suggests that many young women avoid contraception after abortion care due to a desire for their bodies to rest after the procedure. Other factors may also influence post-abortion contraceptive decision-making and uptake rates. This finding is confirmed by Baynes's study (Baynes et al., 2020) that emphasizes the necessity for integrating contraception intervention within abortion care, including tailored counseling to empower clients on fertility preferences and improve contraceptive uptake rates.

The results indicate that decision-making around abortion was a significant factor in determining the demand for contraception following a medical abortion. Notably, many participants reported making the decision to have an abortion without their partner's involvement. The marginal effect was positive at 0.17, suggesting that women who received support from spouses or peers when deciding to terminate a pregnancy were 17% more likely to use contraception after the abortion compared to women who made the decision independently. The significance of this finding is supported by Sarnak study (Sarnak et al., 2021) in Uganda which underscored the complexity of contraceptive use as a socially and interpersonally governed behavior, beyond merely a health decision thus partners approval and social support is very important in consistent method use. Partner support and open dialogue can be seen as predictors of successful and continued use of contraception.

Ever use of contraception was a significant determinant of use of contraception following medical abortion. This took the values of one if the woman had previously used a contraception method prior to the index pregnancy and zero if otherwise. The marginal effect was positive 0.13 which implies women who had used contraception before the index pregnancy had 13% higher likelihood of using contraception as compared to women with non-previous contraceptive use. The significance of ever use of contraception on post medical abortion contraception demand is confirmed by Bizuneh and Azeze (Bizuneh & Azeze, 2021) study conducted in eastern Africa that established that past behaviors related to contraceptive use can influence future family planning decisions including demand for contraception following medical abortion. Additionally, this could highlight areas for intervention by contraception service provider to enhance post abortion contraception use outcomes.

The results show a correlation between education attainment and post medical abortion contraception with women who have completed at least primary education having a 5% higher likelihood of adopting contraceptive methods following a medical abortion compared to women without educational attainment. The importance of education in influencing contraception demand is supported by studies such as Waiz (Waiz, 2000) that suggest increasing women's access to education is pivotal in enhancing reproductive health outcomes and driving socioeconomic development in less-developed countries. Educational attainment often leads to increased use of modern contraceptive methods, contributing to lower fertility rates as well as alleviating the strain on resources and improving maternal and child health outcomes. Furthermore, a study by Woldeamanuel (Woldeamanuel et al., 2023) confirms that education enhances mothers' understanding and access to contraceptive methods.

Marital status had a positive marginal effect of 0.08 on the demand for contraception following a medical abortion. This implies that married women are 8% more likely to use contraception after undergoing a medical abortion. Married women may be particularly motivated to consider contraception because of the immediate return of fertility and the potential quick resumption of sexual activity. Additionally, they often engage in sexual activity more frequently and may rely on their partner's financial support, further increasing the importance of managing household fertility. The finding is confirmed by (Mankelkl et al., 2024) study that notes positive correlation with the use of modern contraceptives following abortion.

Age of the woman was significant in influencing demand for contraception following medical abortion. The coefficient of the marginal effect was negative 0.06, this implies that adolescent and young women were 6% less likely to use contraception following medical abortion compared to adult women. The finding is confirmed by (Daniels & Abma, 2017) that indicates the usage of contraception is notably higher among women aged 25 to 44, compared to those below 25. This is further confirmed by Forty's study (Forty et al., 2021) in Malawi that demonstrated a trend of increasing demand for contraception as women age. Additionally, adolescents and young women perceive contraceptive use as promiscuity, which could negatively impact demand and use after medical abortion compared to

adult women. Lack of adequate financial resources could also impact the use of contraception following medical abortion.

All variables exhibited the expected coefficient sign of the marginal effects, except for exposure to the intervention and employment status, which showed a negative influence on contraceptive use following a medical abortion. The log for cost of abortion, number of children alive, household income and employment status were not statistically significant in explaining variation in demand for contraception following medical abortion.

5.0 CONCLUSION

The findings indicate that several factors significantly influence contraceptive uptake following medical abortion among women. These include exposure to contraceptive promotion at the time of purchasing medical abortion drugs, bundling contraception with abortion drugs, age, marital status, educational attainment, previous contraceptive use, and involvement in abortion decision-making. However, it is essential that interventions align with women's priorities and preferences to achieve better contraceptive outcomes. The study also highlights the complexity of contraceptive behavior after medical abortion, shaped by socioeconomic context, exposure to interventions, and personal decision-making dynamics. This underlines the need for approaches that prioritize women's needs and support informed choices. Effective demand-generation strategies and decision-making support are critical to enhancing contraceptive uptake. The findings suggest policy initiatives should focus on integrating contraception promotion within abortion services, as well as tailoring educational and decision-making supports to different demographic groups—particularly adolescents and young women, who showed lower rates of contraceptive adoption. The study further advocates for the inclusion of abortion and contraceptive services in Universal Health Coverage and sexual and reproductive health (SRH) packages, as comprehensive services have proven to be more affordable and provide broader access to necessary health information and services. By expanding accessibility and developing targeted communication strategies, the study supports ethical incorporation of contraceptive counseling through pharmacies and within medical abortion services, ultimately improving reproductive health outcomes and reducing subsequent unintended pregnancies.

5.1 Limitation of the study.

The study has several limitations that constrain our ability to draw causal conclusions from the analysis. First, the pilot tool did not capture participants' monthly income, household expenditure on contraception, or the actual price of post-abortion contraception, even though these financial factors are important determinants of demand; instead, we used the log values of abortion cost as a proxy for contraception price, which may have introduced measurement error and bias into our estimates. Additionally, the lack of data on household or women's income, contraception expenditure, and actual contraception costs limit our understanding of how financial constraints and budget considerations shape women's decisions regarding contraception demand. Expenditure data could have reflected underlying health needs and priorities driving contraception use. Secondly, the absence of a comparison group limits our capacity to control confounding variables and to attribute observed associations directly to the interventions promoting demand for contraception, as unmeasured group differences may account for these findings. Lastly, the delivery of interventions by different agents, such as community mobilizers and chatbot who were not directly involved in participants' abortion experiences—may have influenced both intervention uptake and subsequent post-abortion contraception use, further complicating efforts to isolate the effects of specific intervention components. Collectively, these limitations, along with the absence of qualitative insights from users, highlight the need for more comprehensive data collection and study design in future research to better inform causal inference and to more fully understand the determinants of post-abortion contraception uptake.

Conflict of Interest: None declared.

Ethical Approval: Not applicable.

Funding: None.

References

Aloo, N., Nyachae, P., Mbugua, N., Sirera, M., Owino, K., Kagwe, P., Nyamu, N., Hanif, M., & Ndirangu, M. (2023). Improving access to family planning services through community pharmacies: Experience from The Challenge Initiative in three counties in Kenya. *Frontiers in Global Women's Health*, *4*. https://doi.org/10.3389/fgwh.2023.1060832

Askew, I., Raney, L., Kerrigan, M., & Sridhar, A. (2024). Family planning saves maternal and newborn lives: Why universal access to contraception must be prioritized in national maternal and newborn health policies, financing,

and programs. *International Journal of Gynecology and Obstetrics*, *164*(2), 536–540. https://doi.org/10.1002/ijgo.15127

Awoyemi, B. O., &Novignon, J. (2014). Demand for abortion and post abortion care in Ibadan, Nigeria. *Health Economics Review*, *4*(1), 1–9. https://doi.org/10.1186/s13561-014-0003-9

Baynes, C., Yegon, E., Lusiola, G., Achola, J., &Kahando, R. (2020). Post-abortion fertility desires, contraceptive uptake and unmet need for family planning: Voices of post-abortion care clients in Tanzania. *Journal of Biosocial Science*. https://doi.org/10.1017/S0021932020000607

Benson, J., Andersen, K., Brahmi, D., Healy, J., Mark, A., Ajode, A., & Griffin, R. (2018). What contraception do women use after abortion? An analysis of 319,385 cases from eight countries. *Global Public Health*, *13*(1). https://doi.org/10.1080/17441692.2016.1174280

Bizuneh, A. D., & Azeze, G. G. (2021). Post-abortion family planning use, method preference, and its determinant factors in Eastern Africa: a systematic review and meta-analysis. *Systematic Reviews*, *10*(1). https://doi.org/10.1186/s13643-021-01731-4

Bongaarts, J., &Sitruk-Ware, R. (2019). Climate change and contraception. In *BMJ Sexual and Reproductive Health* (Vol. 45, Issue 4, pp. 233–235). BMJ Publishing Group. https://doi.org/10.1136/bmjsrh-2019-200399

Cherono, G. (2013). Determinants of contraceptive use in Kenya. *Determinants of Contraceptive Use in Kenya*, *98*(4), 17–24.

Daniels, K., & Abma, J. C. (2017). NCHS Data Brief, Number 388, October 2020. In *National Survey of Family Growth*. https://www.cdc.gov/nchs/products/index.htm.

Forty, J., Rakgoasi, S. D., &Keetile, M. (2021). Patterns and determinants of modern contraceptive use and intention to usecontraceptives among Malawian women of reproductive ages (15–49 years). *Contraception and Reproductive Medicine*, *6*(1). https://doi.org/10.1186/s40834-021-00163-8

Gemzell-Danielsson, K., Kopp Kallner, H., & Faúndes, A. (2014). Contraception following abortion and the treatment of incomplete abortion. *International Journal of Gynecology & Obstetrics*, *126*(SUPPL. 1), S52–S55. https://doi.org/10.1016/J.IJGO.2014.03.003

Government of Kenya (GOK). (n.d.). *THE CONSTITUTION OF KENYA, 2010*. www.kenyalaw.org

Grossman, M. (1972). *The demand for health: a theoretical and empirical investigation.* National Bureau of Economic Research.

Guzmán, J. Miguel. (2009). *Population dynamics and climate change*. UNFPA ; IIED.

Kenya Ministry of Health. (2023). *Kenya_Essential_Medicines_List_2023_qbkhTlV*.

Kenya MOH. (2019). *Post Abortion Care -GUIDELINES-Feb-2019*.

Khalil, A., Samara, A., O'Brien, P., Coutinho, C. M., Quintana, S. M., & Ladhani, S. N. (2023). A call to action: the global failure to effectively tackle maternal mortality rates. In *The Lancet Global Health* (Vol. 11, Issue 8, pp. e1165–e1167). Elsevier Ltd. https://doi.org/10.1016/S2214-109X(23)00247-4

Kim, C., Nguyen, A. T., Berry-Bibee, E., Ermias, Y., Gaffield, M. E., & Kapp, N. (2021). Systemic hormonal contraception initiation after abortion: A systematic review and meta-analysis. *Contraception*, *103*(5), 291–304. https://doi.org/10.1016/J.CONTRACEPTION.2021.01.017

Kungu, Wambui, Alfred Agwanda, and Anne Khasakhala. "Prevalence of and factors associated with contraceptive discontinuation in Kenya." *African journal of primary health care & family medicine* 14.1 (2022): 2992.

Liambila, W., Obare, F., &Keesbury, J. (2010). Can private pharmacy providers offer comprehensive reproductive health services to users of emergency contraceptives? Evidence from Nairobi, Kenya. *Patient Education and Counseling*, *81*(3), 368–373. https://doi.org/10.1016/J.PEC.2010.09.001

Magalona, S., Byrne, M., OlaOlorun, F. M., Mosso, R., Omoluabi, E., Moreau, C., & Bell, S. O. (2022). Contraceptive Use Before and After Abortion: A Cross-Sectional Study from Nigeria and Côte d'Ivoire. *Studies in Family Planning*, *53*(3), 433–453. https://doi.org/10.1111/sifp.12208

Mankelkl, G., Kassaw, A. B., & Kinfe, B. (2024). Factors associated with modern contraceptive utilization among reproductive age women in Kenya; evidenced by the 2022 Kenyan demographic and health survey. *Contraception and Reproductive Medicine*, *9*(1). https://doi.org/10.1186/s40834-024-00271-1

McFadden, D., & Marcel K. Richter. (1990). *Stochastic rationality and revealed stochastic preference." In Preferences, Uncertainty, and Optimality*.

Moges, Y., Hailu, T., Dimtsu, B., Yohannes, Z., &Kelkay, B. (2018). Factors associated with uptake of post-abortion family planning in Shire town, Tigray, Ethiopia. *BMC Research Notes*, *11*(1). https://doi.org/10.1186/s13104-018-4029-7

Mwadhi, M. K., Bangha, M., Wanjiru, S., Mbuthia, M., Kimemia, G., Juma, K., Shirima, J., Unda, S., Achieng, A., Both, J., & Ouedraogo, R. (2023). Why do most young women not take up contraceptives after post-abortion care? An ethnographic study on the effectiveness and quality of contraceptive counselling after PAC in Kilifi County, Kenya. *Sexual and Reproductive Health Matters*, *31*(1). https://doi.org/10.1080/26410397.2023.2264688

Nyarko, S. H. (2020). Spatial variations and socioeconomic determinants of modern contraceptive use in Ghana: A Bayesian multilevel analysis. *PLoS ONE*, *15*(3). https://doi.org/10.1371/journal.pone.0230139

Okech, T. C. (2010). DETERMINANTS OF DEMAND FOR FAMILY PLANNING SERVICES IN CITY SLUMS IN KENYA. *Research Thesis*.

Ochako, Rhoune, et al. "Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study." *BMC public health* 15 (2015): 1-9.

Ontiri, Susan, et al. "A qualitative exploration of contraceptive use and discontinuation among women with an unmet need for modern contraception in Kenya." *Reproductive health* 18 (2021): 1-10.

Ouma, O. J., Ngoga, E. O., Odongo, I., Sigu, B. S., & Akol, A. (2023). Pathways to medical abortion self-use (MASU): results from a cross-sectional survey of women's experiences in Kenya and Uganda. *BMC Women's Health*, *23*(1), 412. https://doi.org/10.1186/s12905-023-02570-2

Radovich, Emma, et al. "Who pays and how much? A cross-sectional study of out-of-pocket payment for modern contraception in Kenya." *BMJ open* 9.2 (2019): e022414.

Reiss, K., Footman, K., Akora, V., Liambila, W., & Ngo, T. D. (2016). Pharmacy workers' knowledge and provision of medication for termination of pregnancy in Kenya. *Journal of Family Planning and Reproductive Health Care*, *42*(3). https://doi.org/10.1136/jfprhc-2013-100821

Sarnak, D. O., Wood, S. N., Zimmerman, L. A., Karp, C., Makumbi, F., Kibira, S. P. S., & Moreau, C. (2021). The role of partner influence in contraceptive adoption, discontinuation, and switching in a nationally representative cohort of Ugandan women. *PLoS ONE*, *16*(1 January). https://doi.org/10.1371/journal.pone.0238662

Singh S, D. J. (2012). *Adding It Up : Costs and Benefits of Contraceptive Services- Estimates for 2012.New York: Guttmacher Institute and United Nations Population Fund (UNFPA) 2012*. *June*, 1–28.

Speizer, I. S., & Lance, P. (2015). Fertility desires, family planning use and pregnancy experience: Longitudinal examination of urban areas in three African countries. *BMC Pregnancy and Childbirth*, *15*(1). https://doi.org/10.1186/s12884-015-0729-3

Starbird, E., Norton, M., & Marcus, R. (2016a). *Investing in Family Planning: Key to Achieving the Sustainable Development Goals*. www.ghspjournal.org

Starbird, E., Norton, M., & Marcus, R. (2016b). *Investing in Family Planning: Key to Achieving the Sustainable Development Goals*. www.ghspjournal.org

Susheela Singh, Akinrinola Bankole, Ann M. Moore, Michael M. Mutua, ChimaraokeIzugbara, Elizabeth Kimani, Shukri Mohamed, AbdhalahZiraba, Caroline Egesa, H. G. A. L. (2013). *REPUBLIC OF KENYA Incidence and Complications of Unsafe Abortion in Kenya Key Findings of a National Study*. *August*.

Track20. (2022). *FP2030 Measurement Report BRIEF*. https://www.track20.org/download/pdf/FP2030_ProgressReport2022_Brief_Final_Web__1_.pdf

United Nations. (2022). *World Family Planning 2022 Meeting the changing needs for family planning: Contraceptive use by age and method*. www.unpopulation.org.

United Nations: The 2030 agenda and the sustainable development goal. (2015). *TRANSFORMING OUR WORLD: THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT UNITED NATIONS UNITED NATIONS TRANSFORMING OUR WORLD: THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT*. https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

Waiz, N. K. (2000). Role of education in the use of contraception. In *Lancet* (Vol. 356, Issue 9248). https://doi.org/10.1016/S0140-6736(00)92037-3

WHO, UNICEF, UNFPA, World Bank Group, & UNDESA/Population Division. (2025). *Trends in maternal mortality estimates 2000 to 2023*. www.who.int/teams/sexual-and-reproductive-health-and-research

Wilmoth, J., Menozzi, C., &Bassarsky, L. (2022). *Why population growth matters for sustainable development POLICY BRIEF NO 130 Key messages*.

Woldeamanuel, B. T., Gessese, G. T., Demie, T. G., Handebo, S., &Biratu, T. D. (2023). Women's education, contraception use, and high-risk fertility behavior: A cross-sectional analysis of the demographic and health survey in Ethiopia. *Frontiers in Global Women's Health*, *4*. https://doi.org/10.3389/fgwh.2023.1071461

World Health Organisation 2015. (2015). Medical eligibility criteria for contraceptive use Fifth edition 2015. *Who*, *July*, 1–14. https://doi.org/www.who.int/reproductive health/topics/familyplanning

Yazdkhasti, M., Pourreza, A., Pirak, A., & Abdi, F. (2015). Unintended Pregnancy and Its Adverse Social and Economic Consequences on Health System: A Narrative Review Article. In *Iran J Public Health* (Vol. 44, Issue 1). http://ijph.tums.ac.ir

Author Biography

Steve Biko Sigu is a Development Economist with research interests in health, women's economic empowerment, and education. He has extensive experience in driving demand for healthcare and advancing economic empowerment through innovative research and community engagement. Steve is skilled in applying human-centered design, market systems development, and adaptive learning approaches to design and implementing high-impact programs.

Dr. Francis Omondi holds a PhD in economics. He is a lecturer at Kenyatta University, in the Department of Applied Economics. His research interests include international trade and health economics. He has influenced economic policies and has consulted for both local and international organizations, including the United Nations Economic Commission for Africa, Oxfam International, the World Resources Institute (WRI), the African Institute for Development Policy (AFIDEP), the African Airlines Association (AFRAA), the Trade Policy Training Centre in Africa (TRAPCA), the African Development Bank (AfDB), and HENNET, among others. His expertise in addressing complex economic challenges and his analytical capabilities make him an invaluable asset in shaping policies for economic growth, social equity, and sustainable development.