Reproductive Health

RESEARCH

Open Access

Feasibility of medication abortion self-care service delivery in Ghana

Joshua Amo-Adjei[1*], Kojo Asamoah Boateng[2], Martha Nicholson[3], Rebecca Wilkins[4], Hadassah Wachsmann[4] and Kwasi Adu-Manu[2]

Abstract

The increasing availability of medication abortion (MA) has significantly enhanced access to safe abortion services in many countries. As abortion medications become more accessible, it is essential to explore various models of care to ensure that MA is available to as many women in need as possible. This study aimed to document evidence regarding the feasibility of three models of care for providing MA utilising a combination of mifepristone and misoprostol: clinic-based, hybrid (a blend of clinic-based and home-based care), and full self-care (where women administer all medications at home without provider supervision). We interviewed 230 (80.7%) out of 285 women and girls who sought MA services within 5 months.

We also conducted in-depth interviews with five (N=5) providers and 24 MA clients. The results revealed a high adoption rate for the hybrid self-care model (66%), followed by full self-care (28%). Many clients expressed satisfaction with the supportive care they received and indicated a willingness to recommend the service to others in their networks who might require medication for pregnancy termination. Notably, clients who utilised facility-based, hybrid, and full self-care models preferred to continue with the same approach for any future terminations. Only about 2.6% of clients reported experiencing incomplete abortions. Furthermore, the individual-level cost of self-managed abortion was substantially lower than that of hybrid and facility-based care. These findings contribute to the growing body of evidence on the feasibility and effectiveness of MA self-care and highlight the implications for program development.

Keywords Medication, Self, Care, Full self, Care, Hybrid self, Care and clinic, Based care

Background

Following the 1994 International Conference on Population and Development (ICPD) in Cairo, numerous countries worldwide—particularly those in sub-Saharan Africa—have made significant strides in creating an enabling environment for safe abortion and minimizing the morbidity and mortality linked to unsafe procedures. The primary focus of these interventions has been on enhancing the availability of family planning services and ensuring that, wherever abortion is legal, it is both safe and accessible. It is essential to guarantee that comprehensive services for managing abortion complications, including counselling on contraception and its provision, are available to all women, irrespective of the legal circumstances surrounding abortion [1–3]. Similarly, there has been some progress in advocating legal reviews to expand the conditions under which abortion is permissible in many hitherto restrictive contexts [4, 5]. These efforts have contributed substantially to reducing

*Correspondence:
Joshua Amo-Adjei
joshua.amo-adjei@ucc.edu.gh
[1] Department of Population and Health, University of Cape Coast, Cape Coast, Ghana
[2] Planned Parenthood Association of Ghana, Accra, Ghana
[3] The Open University, London, UK
[4] International Planned Parenthood Federation, London, UK

© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

morbidities and deaths associated with abortion complications [6, 7].

In the past two decades, a significant development in the conditions surrounding women's access to pregnancy termination services has been the increased availability of effective abortion medications, such as the combination of mifepristone and misoprostol or the use of misoprostol alone. These methods have become standard for early pregnancy termination [8, 9]. The combined regimen of mifepristone and misoprostol has demonstrated a clinical effectiveness rate of over 95% in various studies [10–12]. Encouragingly, women can safely manage early pregnancy termination using medical abortion pills with minimal complications, often without the need for clinician or healthcare provider involvement [13]. In addition to clinical effectiveness, client satisfaction studies—both qualitative and quantitative—indicate high levels of satisfaction among users of mifepristone and misoprostol for early pregnancy termination [14]. These methods support principles of autonomy, privacy, and convenience, which are fundamental to self-care. Furthermore, to ensure that abortion access is genuinely client-led, it is essential to offer clients a choice between home care or clinical care options for their pregnancy termination needs

Self-care, defined as the ability of individuals, families, and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of health providers [13], is evolving to be one of the crucial levers for Universal Health Coverage. For certain health services, self-care interventions can significantly enhance primary health care. One such intervention is abortion, which can be effectively managed through self-management approaches. Self-care interventions encompass evidence-based products, including quality medicines, devices, diagnostics, and digital tools, that can be delivered wholly or in a hybrid manner outside traditional healthcare settings. These interventions may be utilized with or without direct supervision from healthcare professionals [13]. Consequently, the WHO recommends the self-management of early abortion using misoprostol, whether administered alone or as part of a combined regimen, without requiring medical oversight, provided individuals have access to accurate information and can reach health care providers for supportive care when desired or necessary [15].

In 2021, the Ghana Health Service Family Health Division promulgated standards and protocols on comprehensive abortion care (CAC) for providers in Ghana. The law on abortion has been discussed elsewhere [16]. The protocol gives expression and support for self-managed MA. Two specific pronouncements are made in the protocol. First, it sets out the individual woman and institutional eligibility criteria. At the personal level, it recommends that the client must be sure of her last menstrual period, has had regular periods (at least once every six weeks), not be on an IUD or implant or any contraceptive at the time of conception, have no history of ectopic pregnancy nor indicative symptoms and no symptoms of anaemia, bleeding disorders, and previous blood transfusions, among others. At the facility/institutional level, providers must have the capacity for CAC and, complementary to that, have established systems to link clients for follow-up and commitment to adhere strictly to client eligibility criteria. Also, the protocol forbids stand-alone provision of self-care. In this context, health establishments such as pharmacies are excluded from providing abortion self-care [17].

Specifically, the objectives of this paper were to assess the feasibility of medication abortion care delivery models, namely clinic-based (all doses of medication taken at the facility), hybrid self-care (combination of clinic and home), and full self-care (all doses of medication taken at home). We also estimate differences in abortion outcomes relative to the model of care. We also look at the individual-level cost of accessing MA services disaggregated by the service delivery model. We further analyse providers' changing views about the three models and the underlying contextual drivers.

Project description and implementation approach

The Frontiers for Sexual and Reproductive Health Project was designed to enhance the SRHR of women and girls through sustainable, innovative, and client-centred approaches. The core principle of the project was to create healthcare interventions that empower clients to take control of their own sexual and reproductive health. The initiative also aimed to engage and empower young people, enabling them to lead efforts in promoting sustainable positive change within their communities. This was to be achieved through providing unrestricted access to age-appropriate, scientifically accurate, and culturally sensitive SRH information and services.

PPAG, as a member organization of the International Planned Parenthood Federation (IPPF), has delivered SRHR services, information, and education in Ghana for over fifty years. The organization operates SRHR clinics primarily in urban and peri-urban areas, offering services that are based on out-of-pocket payment. Care is provided by midlevel providers, chiefly midwives, while consultant gynaecologists are available for referrals when necessary.

The intervention was executed in three phases across six locations in Ghana: Accra, Cape Coast, Sunyani, Techiman, Kparigu, and Tamale. These locations were organized into three clusters: Southern (Accra & Cape Coast), Middle (Techiman & Sunyani), and Northern

(Kparigu). The project aimed to increase access to quality, self-managed medical abortion as part of a comprehensive abortion care (CAC) package, which is the focus of this paper.

Phase 1 (April 2021 - September 2021)

Initially, we trained various health providers, including over-the-counter (OTC) drug sellers, pharmacists (n=45), and youth volunteers (n=21), to provide accurate information on self-managed abortion using mifepristone and misoprostol. The training covered harm reduction, referrals, use of informational materials, identification of warning signs and complications, an eligibility questionnaire, and digital platforms to provide accurate information on the abortion process.

Following this, service providers and contact centre agents (n=36) were trained to offer in-person and remote support to clients for self-managing pregnancy termination. Clients visiting one of the six PPAG facilities received counselling from service providers on the available pregnancy termination services, including manual vacuum aspiration (MVA). Those who chose medical abortion (MA) were further counselled and provided with the first dose (mifepristone) of the combined regimen (mifepristone and misoprostol pills) in the presence of a service provider. The client was then provided misoprostol to use outside the facility within the stipulated time interval, with support from the service provider if needed. Service providers and contact centre agents remotely supported clients through calls and mobile phone short messaging service (SMS) when they were outside the facility.

Lastly, the intervention involved a Value Clarification and Attitude Transformation (VCAT) workshop on ASC for the PPAG clinic and project staff (n=8). This workshop allowed staff to reflect, discuss, and evaluate their knowledge, attitudes, and practices on ASC daily.

Phase 2 (October 2021 - March 2022)

PPAG implemented a full ASC intervention in one district in the last quarter of 2021. In this district, abortion clients led the abortion process on their own with support from PPAG staff. During this phase, clients took all the medications outside the facility. The abortion medication was either picked up at the PPAG clinic of choice or through courier services. However, for those using courier services, a PPAG service provider remotely counselled and evaluated the client as required in Ghana under the Comprehensive Abortion Care Service Delivery Protocols (2021) [17]. As part of phase 2, PPAG community volunteers continued to receive support and training on ASC and how to support prospective clients to access abortion services seamlessly.

Phase 3 (April 2022 to December 2022)

The ASC intervention was scaled to all six PPAG clinics from April 2022. Scaling up involved capacity-building sessions on ASC across all the participating facilities. Figure 1 illustrates the phases:

Methods of data collection and analysis

The research was conducted in five PPAG-affiliated clinics in Accra, Cape Coast, Kparigu, Sunyani, and Techiman. It encompassed a prospective observational sequential mixed-method [18] study involving the collection of both quantitative (dominant) and qualitative (supplementary) data. The quantitative data focused on recording adverse outcomes, service costs for individual women, quality of supportive care, and post-abortion contraceptive use.

Quantitative data collection

Clients visiting the facility for pregnancy termination were given comprehensive counselling on both surgical and medical abortion options. Those who chose medication abortion met the initial eligibility criteria. The primary healthcare provider introduced medication abortion to the clients who became a part of the study. Those who agreed to participate in the study were directed to a fieldworker assigned to each facility, who provided detailed study information and obtained their consent. An essential requirement for participation was having a personal mobile phone for follow-up interviews, as clients did not need to return to the facility for follow-ups, regardless of the MA model they chose. The tool was interviewer-administered, either in person or through phone. Recruitment took place from May 1st to October 30 th, 2022, resulting in 285 clients being recruited, with 230 successfully interviewed, representing an 80.7% response rate.

Qualitative data collection

Qualitative interviews were conducted with a diverse group of clients who had participated in the quantitative questionnaire, with the aim of elucidating certain quantitative findings. At the conclusion of the questionnaire administration, respondents were asked if they would be willing to take part in in-depth follow-up interviews, and approximately 86% agreed. A purposive sample of 25 questionnaire respondents was then interviewed by phone, ensuring representation from various abortion care models.

The lead provider at each clinic was interviewed, with some providers being re-interviewed to clarify observations. Informal discussions were held with providers and PPAG programmers at the national headquarters to address site-specific differences in the cost of services

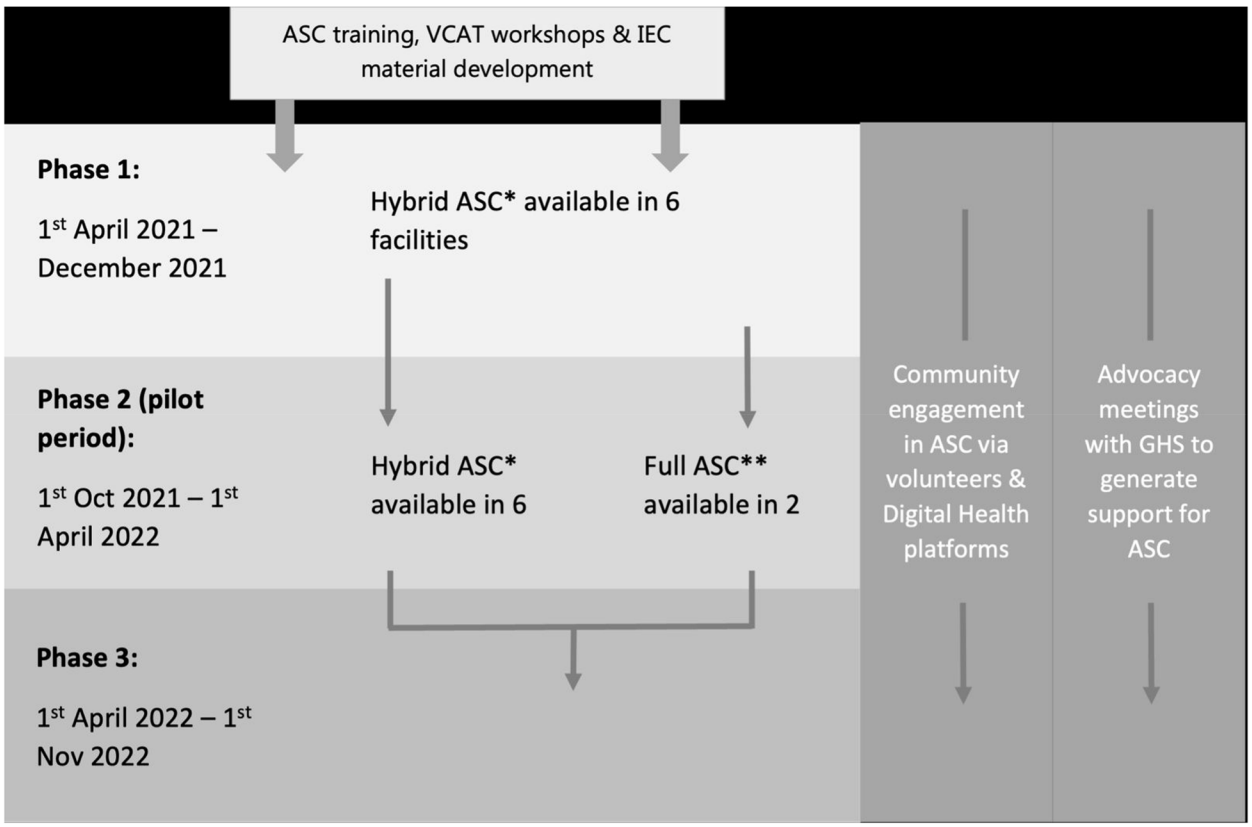

Fig. 1 ASC Implementation approach

to women. Supplementary/clarification interviews were conducted with clients to gather insights on emerging findings from the quantitative data, such as probing reasons for the high preference and adoption of injectables as a post-abortion contraceptive method. Consent for follow-up interviews was obtained at the end of the questionnaire interviews, and the lead author conducted all the interviews.

Data collection instruments focused on various themes, including socioeconomic characteristics, pregnancy and childbirth history, contraception and family planning use, sexual behaviour and abortion history, index pregnancy, abortion decision-making, and post-abortion contraception intentions. Follow-up interviews focused on actual post-abortion contraception use and evidence of adverse events/outcomes.

Data analysis

The quantitative data were exported into STATA version 15 for cleaning and recording variables. The following variables were recoded: study site (1=southern, 2=middle & northern=3), age (1=15–24, 2=25–34 & 3=35–44), gestation (1=<6wks, 2=6-7wks & 3=8-9wks), marital status (1=1 married, 2=cohabiting, 3=never married/never lived together, and 4=formerly married), educational level (1=primary, 2=secondary, and 3=higher). Place of residence and type of MA model were retained as originally collected. Descriptive proportions and Chi-square tests were computed for the quantitative data.

The qualitative data was intended to offer deeper insights into the quantitative data. The deductive analytical approach allowed for identifying themes related to critical quantitative findings. The qualitative data underwent manual analysis, with the research team conducting multiple peer reviews and validation meetings to ensure the reliability of the process.

Ethical approval and consent to participate

Participants'consent was obtained at recruitment and during the definitive interviewing. All the respondents were adults 18 years and older. The research protocol was reviewed and approved by the Ghana Health Service Ethics Review Committee (GHS-ERC 020/12/21). At the client level, informed consent, privacy, autonomy, and anonymity were strictly followed.

Table 1 Background characteristics of respondents, gestational age of index pregnancy and source of information on MA services

Variable	*N*	*%*
Site		
Southern	140	64.4
Middle	49	21.3
Northern	33	14.3
Age		
15–24	106	46.1
25–34	104	45.2
35–44	20	8.7
Place of residence		
Rural	61	26.5
Urban	169	73.5
Education		
Primary	29	13.2
Secondary	107	48.6
Higher	84	38.2
Work activity		
Work, full-time	87	37.8
Work, part-time	26	11.3
Student	65	28.3
Unemployed	38	16.5
Others	14	6.1
Marital status		
Married	58	25.2
Cohabiting	24	10.4
Never married, not living together	134	58.3
Formerly married	14	6.1
Route of medication administration		
Oral--swallowed with water	11	4.8
Buccal--bn gum and cheek	35	15.3
Sublingual--under tongue	175	76.4
Vaginal	8	3.5
Gestational age of pregnancy		
<6wks	90	39.1
6-7wks	111	48.3
8-9wks	29	12.6
Source of Infor about PPAG services		
Friends/relatives	184	80.3
Media--Social & Trad	10	4
Staff of PPAG	13	5.7
Others	22	10
Total	230	–

Results

Characteristics of Respondents

The demographic characteristics of the questionnaire respondents are detailed in Table 1. Most of the clients (64.4%) were surveyed in the Southern cluster (Accra and Cape Coast), while the Northern cluster had the least representation at 14.3%. In terms of age, nearly half of the respondents fell within the 15 to 24 years range (46%), and a similar proportion was in the 25 to 34 years category (45%). The remaining respondents were aged between 35 and 44 years (9%). Most participants resided in urban areas (73%), and nearly half (49%) had completed secondary education. About one-third of the respondents worked full-time (38%), while approximately one-fifth identified as students (28%). More than half of the respondents (58%) had never married, with 25% currently married and 10% cohabiting.

On the gestational age of the index pregnancy, roughly 48% were between 6 and 7 weeks, with about one in ten (13%) aged 8–9 weeks. Some evidence shows that most women recognise their pregnancy eight weeks after the last menstrual period (LMP) [19]. It has been argued that early pregnancy detection is not only helpful to a healthy pregnancy if one decides to carry to term but also crucial for pregnancy termination outcomes, as abortion services for pregnancies over 12 weeks' gestation can be more complicated to access due to legal, institutional, and social factors [20]. The route of administering the misoprostol was sublingual for most respondents (76%) (Table 1).

Choice of MA Model and Associated Characteristics

Approximately two-thirds (66%) of the clients utilised a hybrid self-care model and about one-third used full self-care. Table 2 displays the background characteristics of the respondents, and the MA model utilised. Statistical differences are indicated using Chi-square. The results reveal geographical (regional) and residence (urban-rural) associations with the MA model. Specifically, the proportion of respondents (61%) in the Northern cluster/Kparigu who used full self-care was higher than the proportion in the Middle (Techiman and Sunyani – 35%) and Southern clusters (Cape Coast and Accra – 18%). Additionally, the gestational age of pregnancy was significantly associated (0.05%) with the model utilised.

Further analysis was conducted to understand the higher preference for full self-care in the Northern cluster/Kparigu compared to the other sites. The interview data provided two probable reasons. Firstly, it was discovered that many clients in the northern cluster/Kparigu relied on proxies to pick up medications, often by a male partner or an older relative/friend. The Kparigu facility is situated in a rural community, which serves clients from a wide geographical area with limited access to transportation.

Secondly, the narratives indicated a prevalent reliance on home delivery of medications in the northern cluster. The other clinics rarely mentioned the scale of these

Table 2 Respondents' background characteristics and model of ASC

	Type of MA Care			
	Facility-Based	**Hybrid Self-Care**	**Full Self-Care**	**Total**
	%	%	%	No.
Study Zone	χ2=27.9079; *p*=0.000			
Southern	6.8	75	18.2	148
Middle	10.2	55.1	34.7	49
Northern	-	39.4	60.6	33
Age group	χ2=5.8275; *p*=0.212			
15–24	6.6	63.2	30.2	106
25–34	5.8	64.4	29.8	104
35–44	10	85	5	20
Place of residence	χ2=6.5109; *p*=0.039			
Rural	9.8	52.5	37.7	61
Urban	5.3	70.4	24.3	169
Highest level of education	χ2=7.9542; p=0.093			
Primary	10.3	48.3	41.4	29
Secondary	5.6	73.8	20.6	107
Higher/Other	6	61.9	32.1	84
Type of work activity	χ2=9.8559; p=0.275			
Work, full-time	4.6	73.6	21.8	87
Work, part-time	3.8	65.4	30.8	26
Student	4.6	64.6	30.8	65
Unemployed	13.2	57.9	28.9	38
Others	14.3	42.9	42.9	14
Marital status	χ2=9.0318; p=0.172			
Marital Status	1.7	69	29.3	58
Married	8.3	70.8	20.8	24
Cohabiting	6.7	65.7	27.6	134
Never married & never together	21.4	42.9	35.7	14
Gestation in weeks	χ2=11.3172; p=0.023			
<6wks	11.1	57.8	31.1	90
6-7wks	3.6	74.8	21.6	111
8-9wks	3.4	55.2	41.4	29
Total	6.5	65.7	27.8	230

two delivery options. In the different facilities, providers reported a high number of walk-in clients, and most clients opted to initiate the medical abortion under the provider's supervision at the facility.

Furthermore, the proportion of clients in rural areas (38%) who chose full self-care was higher than that of urban communities (24%). Women whose pregnancies were 8–9 weeks were more likely to use full self-care than women with earlier gestations (Table 2).

Future preferences

We also explored the relationship between the initial ASC model used for pregnancy termination and the model preferred for future terminations. The association test revealed a significant connection between the initial termination model and future preferences. For instance, approximately 80% of individuals who opted for facility-based care indicated they planned to continue using that same model. Similarly, 74% of those who chose hybrid self-care expressed their intention to maintain their current approach. These individuals appreciated their selected model due to the satisfactory outcomes it provided and the importance of taking medication under the supervision of a healthcare professional.

In contrast, a larger proportion (64%) of clients using the full self-care model for their initial termination preferred facility-based care for future procedures. These associations are statistically significant (χ2=160.9483;

p=0.000). Follow-up interviews were conducted with clients who had used the full self-care model and intended to switch to clinic-based care. While some clients in this category reported no specific reasons for their future preference, others cited difficulty in adhering to the dosing instructions, leading to self-reported incomplete outcomes. This experience prompted them to return to the facility for a new set of medications for supervised intake. This situation may suggest a lower acceptance of the full self-care model within this population. However, it is important to acknowledge that these findings are based solely on self-reports, which have not been validated by healthcare providers, representing a limitation of this study.

MA Outcomes by Route of Administration and ASC Model

Approximately 6% (N=14) of the respondents self-reported adverse outcomes (excessive bleeding – using more than six pads in 24 hrs=7 and incomplete abortion). The adverse outcomes did not vary significantly across study sites/clinics, age of respondents, highest level of education, residence, marital status, model of abortion care, and gestational age. However, the route of administering the misoprostol was significantly associated ($\chi2=20.45$; $p=0.001$) with adverse outcomes (excessive bleeding or incomplete abortion) (Table 3). The proportion of adverse outcomes was substantially higher among clients who swallowed with water (not recommended route) (30%; N=10) and those who inserted (40%; N=5) vaginally, even though some prior evidence [21–23] support the vaginal insertion of misoprostol as an effective method of early gestation pregnancy termination. In the case of vaginal insertion, the number of clients in this category was small (N=8), and we have no information on whether women inserted the drugs correctly as recommended. The least adverse outcomes were recorded among those who administered sublingually (4%; N=171) and buccally (5.7%; N=35). Sublingual and buccal methods have already been affirmed as practical [24, 25] and consistent with what was found in this study. The data also show no significant difference in adverse outcomes by type of ASC model; the proportions ranged from 3% (full self-care) to 7.6% (hybrid self-care).

Table 3 Proportion of respondents who had negative experience with abortion medication by background characteristics

	%	No.
Study Site	χ2 0.7620; p=0.683	
Southern	7.1	140
Middle	6.2	48
Northern	3	33
Age group	χ2=1.0662; p=0.587	
15–24	5	101
25–34	6.9	102
35–44	11.1	18
Place of residence	χ2=3.0248; p=0.082	
Rural	1.7	60
Urban	8.1	161
Highest level of education	χ2=1.4235; p=0.491	
Primary	3.6	28
Secondary	8.7	104
Higher/Other	5.1	79
Type of work activity	χ2=1.2933; p=0.863	
Work, full-time	7.1	85
Work, part-time	8.7	23
Student	6.5	62
Unemployed	5.4	37
Others	0	14
Marital Status	χ2=2.7782; p=0.427	
Married	3.5	57
Cohabiting	8.7	23
Never married & never together	6.2	128
Formerly married	15.4	13
Route of misoprostol administration	χ2=20.4592; p=0.000	
Oral--swallowed with water	30	10
Buccal--bn gum and cheek	5.7	35
Sublingual--under tongue	4.1	171
Vaginal	40	5
Gestation in weeks	χ2=0.2499; p=0.883	
<6wks	7.1	84
6-7wks	5.5	109
8-9wks	7.1	28
MA Model	χ2=1.4081; p=0.495	
Facility-based abortion	7.1	14
Hybrid self-care	7.6	145
Full self-care	3.2	62
Total	6.3	221*

* The N in this table is less than 230 due to non-response/missing data on the outcome variable

Provider views about self-managed ASC screening tool and self-care preferences

The CAC options counselling tool was developed to assess whether MA clients are eligible for ASC. A flowchart outlining the tool can be found in Table 4. All providers reported that the screening tool was effective and efficient. It was particularly cost-effective for clients as it minimized the need for ultrasound scans to confirm both pregnancy and gestational age. Additionally, the tool offered valuable insights beyond merely verifying gestational age. Providers noted its utility in evaluating other eligibility criteria, such as anaemia, a history of ectopic pregnancy, and recent surgeries involving the fallopian tubes. In summary, providers regarded the

Table 4 PPAG CAC options counselling tool

S. N	QUESTIONS	ANSWER	GUIDANCE
1	Am I speaking with the person who would like to access abortion or are you calling on behalf of someone else?	Yes	Proceed with options counselling
		No	Find out whether the caller can pass the phone to the person seeking abortion, or whether they are confident they have (or can relay) accurate information.
	Last Menstrual Period		
2	I'm now going to ask you about your last menstrual period because this will help me recommend the best abortion option for you. Try to think back to when it was and answer as accurately as you can. Does the client know the date their last menstrual period began?	Yes	Make note of LMP and proceed with options counselling (if 9 weeks gestation or less).
		No	Support the client to remember date of LMP with the aid of a calendar and significant dates, and other factors in the woman's history e.g.: • did her LMP occur around a birthday, holiday, or other memorable date? • when did she first have a positive pregnancy test? • when did intercourse occur? If LMP still cannot be remembered, the following questions can be asked to determine eligibility: • Are you more than 9 weeks pregnant? • Are you more than 2 months pregnant? If still uncertain, request the client has an ultrasound
3	Was it a normal period, or was it especially light or heavy? (The woman should judge if the period was normal, heavy or light based on her experience of previous periods).	Normal	Proceed with options counselling
		Especially light	Take date of the last normal LMP as accurate
		Especially heavy	Do a repeated pregnancy test and take the LMP date as accurate
4	Does the client have regular periods (at least one every 6 weeks)	Yes	Proceed with options counselling
		No	Request the client has an ultrasound if periods are less frequent than 6-weekly
5	Does the client have any unusual bleeding outside of your normal menstrual cycle?	Yes	Refer client to clinic for in-person assessment and appropriate management
		No	Proceed with options counselling
	Precaution		
6	Has the client tried to end this pregnancy with any other medication or other traditional methods?	Yes	Refer client to clinic for post-abortion care.
		No	Proceed with options counselling
7	Does the client have an IUD/IUS in place at the time of conception?	Yes	Refer client to clinic for IUD removal if they want to proceed with medical abortion. SMMA is possible following IUD removal.
		No	Proceed with options counselling
8	Was the client using any hormonal method of contraception at the time of conception (implant, injectable or pills)?	Yes	Make note of the type of contraception used and proceed with options counselling
		No	Proceed with options counselling

Table 4 (continued)

S. N	QUESTIONS	ANSWER	GUIDANCE
9	Does the client have any symptoms of anaemia, - bleeding disorders, - previous blood transfusions, and/or any - haemoglobinopathies	Yes	Refer client to a clinic for further assessment. Clinical judgement is needed to assess if medical abortion and SMMA is an appropriate option.
		No	Proceed with options counselling
10	Does the client have any serious chronic disease, including heart disease?	Yes	Refer client to a clinic for further assessment. Clinical judgement is needed to assess if medical abortion and SMMA is an appropriate option.
		No	Proceed with options counselling
	Contraindication		
11	Does the client have a known allergy to mifepristone, misoprostol, or other prostaglandins?	If 'Yes' to any of the questions, counsel the client and refer to the clinic for further assessment and appropriate management.	
12	Does the client have adrenal failure?		
13	Does the client have a history of previous ectopic pregnancies?		
14	Does the client have symptoms suggestive of ectopic pregnancy? o **Abdominal or pelvic pain (usually one-sided)** o **Spotting/irregular bleeding** o **Vaginal bleeding**		
15	Has the client ever had surgery on their Fallopian tubes (e.g. tubal ligation) or been told, following an operation, that their Fallopian tubes are damaged?*		

screening tool as a practical resource for accurately determining gestational ages and identifying any contraindications to self-managed medical abortion.

Despite some differing opinions, many providers maintained that ultrasound scans could offer valuable complementary support within the Ghanaian context for three primary reasons. First, several women may not track their menstrual cycles or may be unaware of them, which complicates the accurate determination of the last menstrual period (LMP). Second, some women might inadvertently misreport their gestational age, for instance, estimating their pregnancy at an earlier stage due to fears or concerns about accessing abortion services that align with their needs and preferences. Finally, certain providers considered ultrasound scans crucial for ruling out ectopic pregnancies.

The providers participating in the discussion were divided in their preferences between the hybrid and complete self-care models, although most PPAG community SRHR volunteers leaned towards hybrid self-care. Their inclination for this model echoed the sentiments expressed by providers regarding the screening tool in comparison to ultrasound.

On the other hand, convenience and empowerment were the primary reasons cited by those providers who favoured full self-care. One provider observed that...:

> *It gives women or girls the convenience to lead, with or without the provider. It provides them with leadership. I will recommend full self-care. (Provider S)*

One of the providers who initially supported hybrid self-care due to concerns about potential complications from improper medication use during the second wave of interviews later changed her stance. She expressed a preference for full self-care, emphasizing that it was both empowering and convenient for women. Full self-care enables women to medicate at times that align with their daily work and other commitments. She remarked rhetorically on the advantages this approach offers.:

> *Imagine that the client is a student and has exams. It will not be convenient to start the medication here and continue in 24 hrs after. However, for full self-care, she will have the luxury of deciding when it is appropriate for her to start. Look at the discomfort and some of the side effects; cramps, nausea and vomiting may all affect her. It won't be easy, but she will finish it at her convenience. (Provider C).*

Quality of supportive care

Quantitative and qualitative data illustrate clients'evaluations of the quality of supportive care. A total of sixteen (16) questions/items were utilised to assess the quality of the services provided. Respondents' feedback indicates that providers generally upheld high standards of care. The item with the lowest affirmative response pertained to the option for follow-up, which received an 85% approval rate. The perceived quality of the services delivered under the ASC model is detailed in Table 5, with results showing minimal variance among responses.

Table 5 Quality of support care for ASC clients

Quality Item	Facility-based	Hybrid	Full Self-care
Did the providers explain to you clearly how the pills they gave you work?	93.3	100	98.4
Did the providers explain to you the route of administering the pills?	100	100	100
Did the provider tell you to expect bleeding and how to manage?	100	98	97
Did the health provider tell you to expect pain?	100	96.7	95.3
Did the provider give you the option of a follow-up appointment to the health facility after taking the drug?	86.7	90.7	68.7
Did the provider ask you whether you did a pregnancy test before arriving at the facility or calling the hotline or sending someone for the medication?	93.3	94.0	90.6
Did the provider ask you for the date of your last menstrual period?	93.3	96.7	92.2
Did the provider listen to all your questions or concerns and answer them in full?	93.3	98.7	90.6
Did you trust that the providers were keeping your personal information confidential?	93.3	96.7	100
Were your personal circumstances considered by the provider during the service?	100	100	100
Were you treated with respect by everyone that you interacted with at PPAG before, during and after your service?	100	98.0	100
Did the provider say or do something to manage your anxieties and fears?	93.3	97.4	93.7
Did the provider give you information on warning signs of complications and how to seek help if needed?	100	97.3	95.3
Did you think that the provider prepared you adequately for what will happen after taking the MA pills?	100	99.3	100
Did you think the provider's instruction on how to take the pills were clearly understood by you?	100	99.3	100
Total Number of respondents	15	151	64

The qualitative data supports the findings presented in Table 4. Nearly all participants in the qualitative study reported positive experiences and expressed no regrets about their choice of provider for the service. Clients' accounts were filled with expressions of satisfaction, intentions to revisit, and a willingness to recommend PPAG for pregnancy termination services to their friends and family. It is noteworthy that many respondents were referred by loved ones. Following their own positive experiences, several participants went on to refer other women seeking safe abortions or assistance with managing unsafe abortions. One participant's story exemplifies this sentiment:

> *When I told the nurses about my situation, they welcomed me well. They treated me very well. Before going, I was not so sure what was wrong with me, and then they assessed me and confirmed that I was pregnant. I went back to inform my partner, who suggested we terminate it, to which I concurred. Someone referred me to the place. I discussed my situation with a nurse friend. I told her I was going to AXY hospital, and she discouraged me from going there with my condition. She told me that I'd not be given treatment at that hospital. When I went to PPAG, they were so lovely. If any friend needed a similar service, I would accompany them to the facility. An in-law was in a similar situation; she attempted termination for five months without success. I recommended PPAG to her. She was evaluated and provided service, and she is now doing well. The providers at the facility are outstanding. (Client, Facility CC)*

Another factor contributing to client satisfaction was the quality of interactions with providers. Participants described the providers as friendly and noted that they offered clear instructions on how to properly use the medications being taken home. To enhance understanding, providers included instruction notes to assist clients in correctly utilising their medications. One client recalled:

> *She explained the instructions clearly and even gave me an instruction note, which greatly helped me use the medication. I did not have any unexpected events after the medication (25-year-old, full self-care client).*

The accounts from other respondents also indicate that the care they received exceeded their expectations. This was largely due to their initial anxiety before receiving the services. However, the quality of provider-client interactions provided reassurance and alleviated their fears and concerns surrounding pregnancy termination. One respondent shared:

> *Before I got there, I was concerned it would be difficult, but after interacting with the nurse, I felt assured. She was very calm and showed that she cared for me. (18-year-old, hybrid self-care client)*

Despite clients'generally positive feedback on the quality of provider-client interactions, we learned of one unpleasant experience in provider-client communication. A client described the provider as harsh and strict in explaining the procedure. The explanations were usually short. However, the client perceived that the provider might have acted that way because the age gap between her and the provider appeared large. The participant appeared satisfied, given that the expected outcome had been achieved.

Individual-level cost of ASC models

All the respondents made out-of-pocket cash payments for the abortion services received. The cost of obtaining an MA was based on self-reports by clients, and the analysis was based on the specific sites. The total average cost of receiving MA from the facilities was GHs 381[1] (95%; 354.69–406.93; p=0.000). The minimum wage for a day for 2022 was GHs 13.53 ($1.03), translating into a monthly salary of about GHs 406 ($30.99). The service cost varied significantly across the study sites, as shown in Fig. 2. The highest average cost to clients was recorded in Cape Coast (Southern cluster), approximately GHs 510 ($36.84), and the lowest was in Kparigu (Northern Cluster) (GHs 182; $13.15).

The main cost areas were drugs (44%), consultation (28%), laboratory tests (17.6%), and ultrasound (10%) (Fig. 3).

The primary funding sources for the service were self (48%) and husband/partner (46%). The data also reveal significant associations ($\chi 2=48.3972$; $p=0.000$) across the study sites. For example, among clients in Accra (Southern cluster) (75%), Techiman (Middle cluster) (59.5%), and Sunyani (Middle cluster) (58%), the cost of the procedure was funded by their partners. Among those utilising services in Cape Coast (Southern cluster), most (65%) clients funded the services from personal resources. In the interviews with clients, we noticed that the covert decision to terminate the pregnancy was the main reason for not consulting the male partners involved in the pregnancy, which led to self-funding.

We assessed the service cost in the ASC model at the individual level. The results are presented in Fig. 4. The

[1] This was equivalent to $1=13.1 at the time of writing the report.

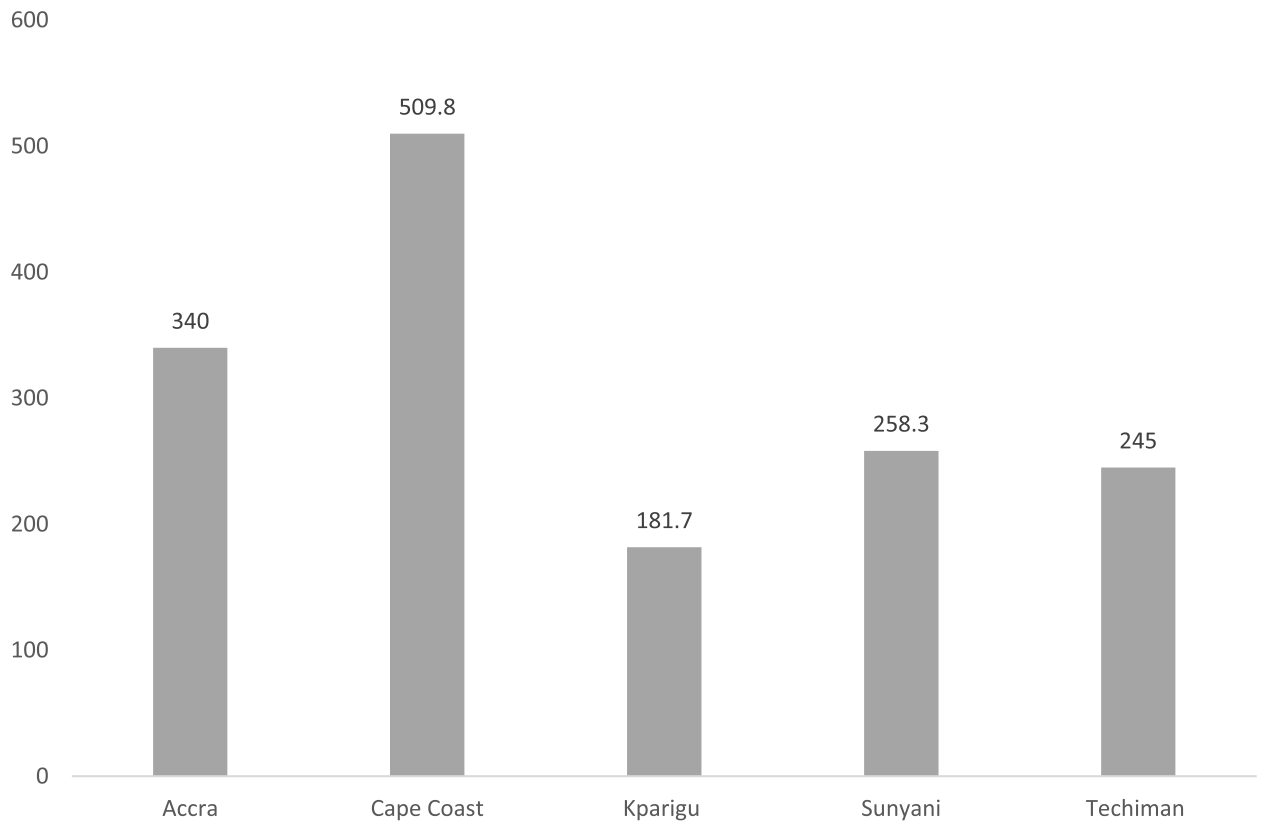

Fig. 2 Average financial cost of MA services by intervention site in Ghana Cedis

average cost for full self-care was significantly lower than that for facility-based and hybrid self-care.

Post-abortion contraceptive uptake

Figure 5 shows the results of the type of care model and whether women adopted a method of contraception post-abortion. Eight in ten (80%) of clinic/facility-based and hybrid self-care clients accepted and took up post-abortion contraceptive methods. However, just about half (54.7%) of the full self-care clients used contraceptives after abortion. The association between the abortion care model and post-abortion contraceptive use was significant ($\chi 2 = 16.07$; $p=0.000$). The probable reason that may account for this is that full self-care clients may not have the full benefit of adequate in-person counselling that facility-based or hybrid self-care may afford or ease of access to obtain the methods, i.e., may not be able to travel to the clinic for methods that cannot be self-administered.

Discussion

This study sought to assess the uptake of the three models of MA service: clinic-based (all doses of medication taken at the facility), hybrid self-care (medication taken at clinic and home), and full self-care (combipack taken at home). We also analysed the differences in abortion outcomes relative to the model of care. In addition, we looked at the individual-level cost of accessing MA services disaggregated by the service delivery model. Finally, we analysed providers'views about the three models at the beginning and the end of the project, whether any changes in perspective occurred during the implementation and what accounted for any changes.

First, the results indicated a high uptake of hybrid self-care during the observation period. This is the first study looking at three different MA care models, particularly with hybrid self-care. The known earlier studies [12, 26] compared home-based and clinic-based care models without the option of combining home-based and clinic-based care or only clinic-based studies [27]. In all these studies, the evidence affirms that the safety of self-managed medical abortion was comparable to clinic-based care. In this study, the uptake of hybrid self-care (a combination of clinic and home-based) was higher than the other models (home and facility-based care). However, adverse outcomes were rare and did not vary significantly among the three models.

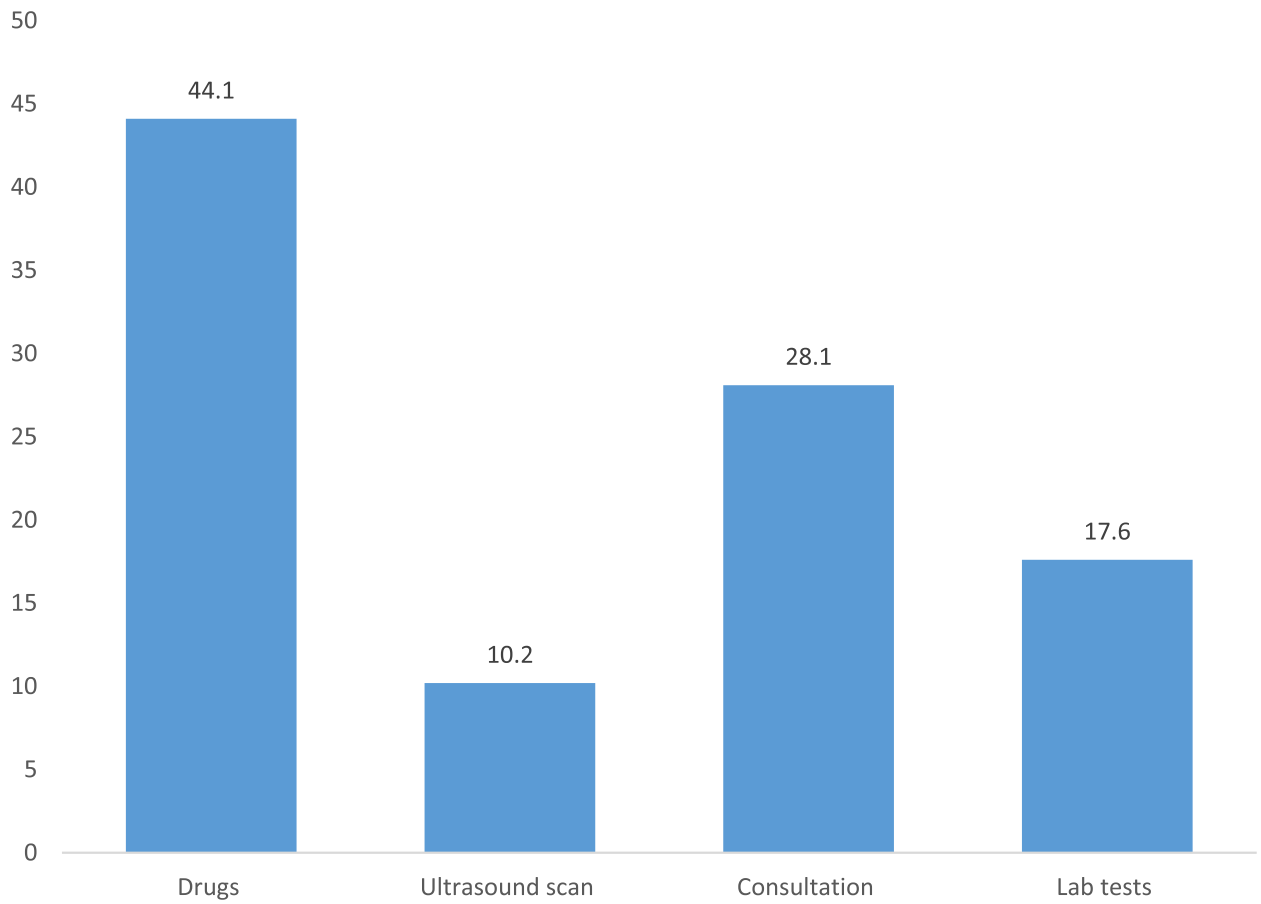

Fig. 3 Main cost components of respondents in Ghana Cedis

At the beginning of the intervention, providers expressed concerns regarding its feasibility, particularly in relation to full self-care practices. A significant worry was whether clients could effectively manage their medications without direct supervision or guidance from providers. Additionally, there was an underlying apprehension about the potential legal liabilities associated with medication, which could result in serious consequences. While the Ghana Health Service protocols on medical abortion (MA) align with the liberal legal provisions in Ghana, these concerns often stem from a lack of clarity surrounding the legal requirements for abortion and pregnancy termination. Specifically, the provisions regarding abortion outlined in Act 29, section 58(2) of the Criminal Code of 1960, as amended by PNDCL 102 of 1985, stipulate that only a registered medical practitioner in a government hospital or in a private hospital or clinic registered under the Private Hospitals and Maternity Homes Act of 1958 (No. 9), or in a location approved by a legislative instrument from the Minister of Health, is authorised to provide abortion services. Previous reviews of the law [see, 16] indicate that there remains uncertainty around the legal text, which may lead to misinterpretations by providers. As the movement toward abortion self-care gains momentum, it is crucial to advocate for legal reforms that align with contemporary advancements in medicine and medical sciences. Furthermore, there is an urgent need to enhance awareness among providers regarding the Ghana Health Service guidelines on abortion service delivery. This will not only instil confidence in middle-level providers but also safeguard the interests of women using medications for abortion.

The findings indicate that over time, providers'perspectives evolved towards the idea of full self-care, based on their belief that it enhances both client convenience and therapeutic empowerment. Evidence suggests that power is inherently linked to the processes of seeking and accessing health services, with the dynamics between providers and patients existing along a continuum of power [28]. This is particularly evident in paternalistic healthcare environments, where physicians and providers often command an almost unquestioned trust from clients [29, 30]. As a result, any medical

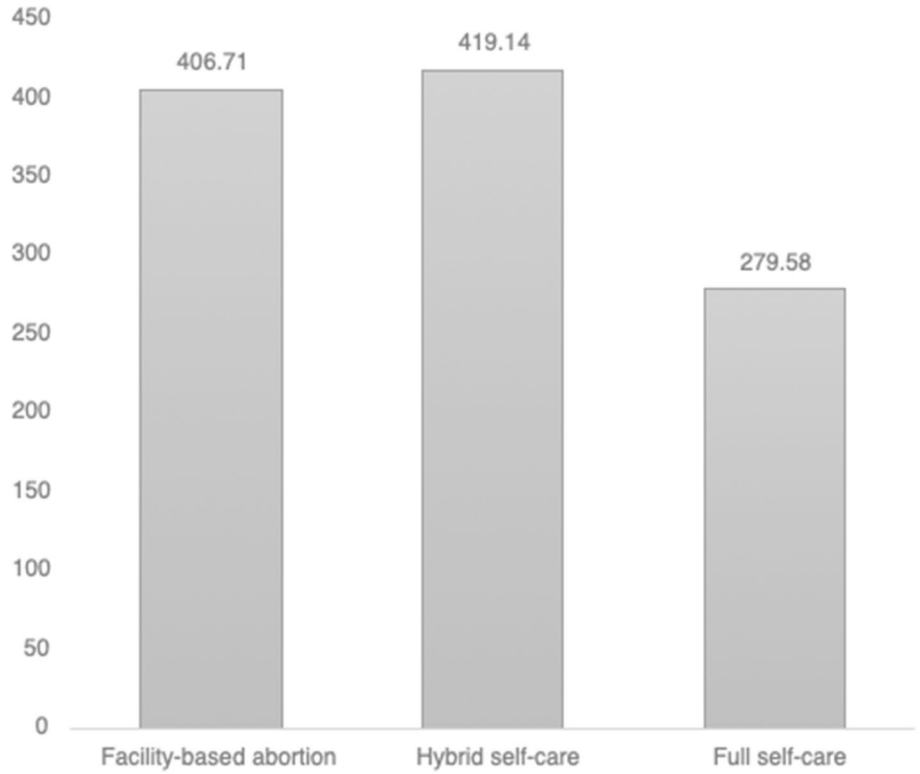

Fig. 4 Average cost of service by ASC model in Ghana Cedis

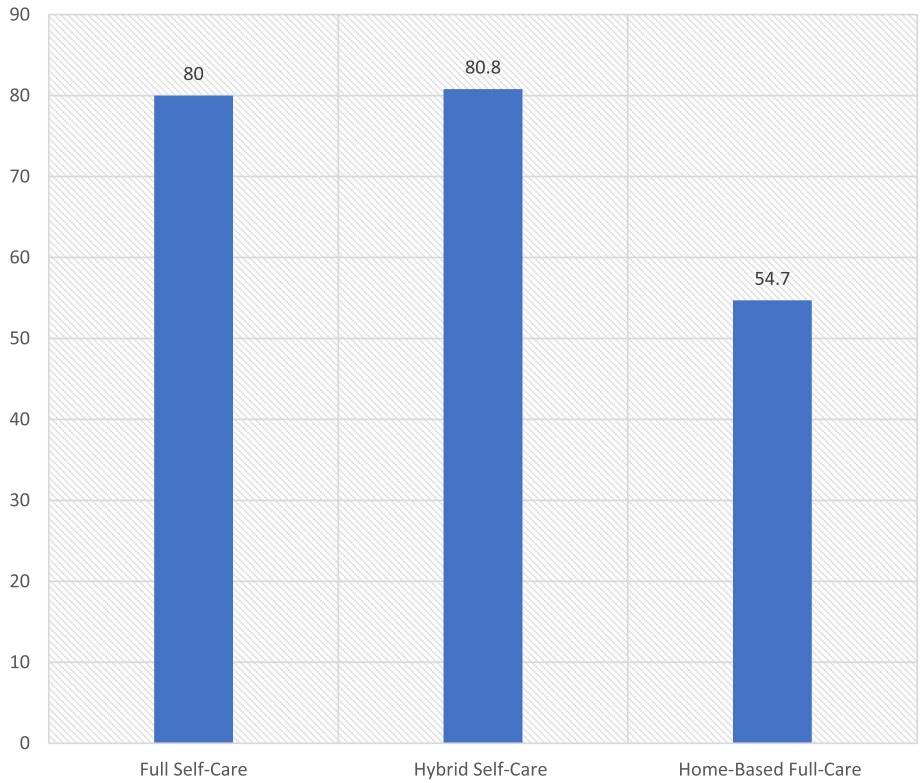

Fig. 5 Type of abortion care model and PAC contraceptive use

model that redistributes power to clients for previously restricted services could serve to empower and liberate them. Initially, during the launch of initiatives aimed at patient empowerment, providers may feel apprehensive about patients' abilities to effectively take on therapeutic leadership. However, as demonstrated in this study, they may gradually acknowledge the role of patients in the care process over time.

When examining the cost of services, we observe significant variations depending on the model of care. Full self-care emerges as the most economical of the three models. Given that the outcomes across these models are comparable, it is essential for MA service providers to actively promote full self-care to all women—and potentially to men of reproductive age. This is crucial, as the average cost of full self-care is approximately one-third lower than that of facility-based and hybrid ASC models. The differences in service costs across various locations arise from multiple interrelated factors. Primarily, consultation and medication fees reflect the economic conditions and poverty levels of the clinic's locality. For example, the North-East Region is among the country's most impoverished areas. Kparigu Clinic, situated in this region, exemplifies how standardizing service costs to match more affluent areas could inadvertently drive more women towards unsafe abortion methods.

While ultrasound is not a requirement for medical abortion (MA), the frequent use of this technology must be understood within its context. In environments where literacy and understanding of the menstrual cycle are generally low, clinical diagnostics may be essential to ensure quality service for clients. This appears to be the case in these settings. Further interviews with providers indicated that some MA clients were uncertain about their last menstrual period (LMP). To avoid complications, they relied on ultrasound to confirm the LMP before administering MA services. Indeed, data from the Ghana Maternal Health Survey [31] suggests that only one-third (36%) of Ghanaian women accurately understand their menstrual cycle. The providers'use of ultrasound, which offers high certainty, can be interpreted considering the low levels of menstrual cycle knowledge. In contrast, a recent study conducted in the US—a context with higher literacy rates—found that individuals seeking an abortion early in pregnancy were able to accurately self-assess their gestational duration based on LMP [32].

One noteworthy finding was the significant adoption of injectable contraceptives following MA. This strong preference aligns with data from both past and recent nationally representative surveys [31, 33]. Evidence suggests that many women using short-acting methods do so as a temporary solution while considering a more long-term option or contemplating forgoing contraception altogether. In this study, it became clear that for numerous women, the choice of injectables was intended as a short-term strategy as they evaluated longer-term methods. It's important to recognize that clients may feel a sense of obligation and indebtedness to their healthcare providers, leading them to accept certain methods due to social pressure immediately after undergoing an abortion. The injectable, a three-month method that allows for discreet family planning, appears to be a convenient interim option for many.

Limitations of the study

Participants for this study were recruited solely from clients at a single NGO clinic. This limitation affects our capacity to generalise the findings to all reproductive-aged women in the country. Additionally, there is a risk of self-selectivity due to the clinic's location, which may not adequately represent vulnerable populations. However, our method of inviting all clients who fulfilled the inclusion criteria to participate helps to mitigate sample selection biases.

Conclusions

The findings from this study suggest that, with appropriate guidance, women can safely and effectively use abortion medication independently and at their convenience to terminate a pregnancy, irrespective of their socioeconomic status. Notably, the cost of such services for individual women is considerably lower than that of medical abortion services provided entirely at a facility, as well as the combined costs of facility and clinic services. Regardless of the ASC model, clients shared memorable experiences with their providers, underscoring the potential of these care models to be expanded to enhance access to safe abortion services. Overall, full-self-care and hybrid models show feasibility and can be promoted, especially full-care, which has a lower cost to women.

Abbreviations

ASC	Abortion Self-care
CAC	Comprehensive Abortion Care
IUD	Intrauterine Device
LMP	Last Menstrual Period
MA	Medication Abortion
PPAG	Planned Parenthood Association of Ghana
SRHR	Sexual and Reproductive Health and Rights

Acknowledgements

We are profoundly indebted to the many women who volunteered to participate in this study. Their experiences and stories were important sources of learning for our team.

Authors' contributions

JAA designed the study, supervised field data collection, analysed the data and developed the draft manuscript. KAB, MN, RW, HW & KAM contributed to conceptualising the study and reviewed the final draft for its intellectual quality. All authors read and approved the final manuscript.

Funding
This study was made possible by financial support to IPPF through generous support from the David and Lucile Packard Foundation (Grant # XX)

Data availability
The datasets used and analysed during the current study are available from the corresponding author based on reasonable request.

Declarations

Ethics approval and consent to participate
All methods and study procedures were carried out according to relevant guidelines and regulations. Informed consent was obtained from all participants who were 18 years or older. The research protocol was reviewed and approved by the Ghana Health Service Ethics Review Committee (GHS-ERC 020/12/21).

Consent for publication
N/A

Competing interests
The authors declare no competing interests.

Received: 30 September 2023 Accepted: 22 April 2025
Published online: 02 May 2025

References

1. Faúndes A. Strategies for the prevention of unsafe abortion. International Journal of Gynecology & Obstetrics. 2012;119:S68–71.
2. Mirembe F, et al. Goals and activities proposed by countries in seven regions of the world toward prevention of unsafe abortion. International Journal of Gynecology & Obstetrics. 2010;110:S25–9.
3. Wonkam A, Hurst SA. Acceptance of abortion by doctors and medical students in Cameroon. The Lancet. 2007;369(9578):1999.
4. Gebrehiwot Y, et al. Changes in morbidity and abortion care in Ethiopia after legal reform: national results from 2008 and 2014. International Perspectives on Sexual and Reproductive Health. 2016;42(3):121.
5. Pizzarossa LB, Skuster P. Toward human rights and evidence-based legal frameworks for (self-managed) abortion: a review of the last decade of legal reform. Health and Human Rights. 2021;23(1):199.
6. Latt SM, Milner A, Kavanagh A. Abortion laws reform may reduce maternal mortality: an ecological study in 162 countries. BMC women's health. 2019;19:1–9.
7. Romero M, et al. Abortion-related morbidity in six Latin American and Caribbean countries: findings of the WHO/HRP multi-country survey on abortion (MCS-A). BMJ Global Health. 2021;6(8): e005618.
8. Goldstone P, Walker C, Hawtin K. Efficacy and safety of mifepristone–buccal misoprostol for early medical abortion in an Australian clinical setting. Australian and New Zealand Journal of Obstetrics and Gynaecology. 2017;57(3):366–71.
9. Løkeland M, et al. Implementing medical abortion with mifepristone and misoprostol in Norway 1998–2013. International journal of epidemiology. 2017;46(2):643–51.
10. Raymond EG, Harrison MS, Weaver MA. Efficacy of misoprostol alone for first-trimester medical abortion: a systematic review. Obstetrics and gynecology. 2019;133(1):137.
11. Rocca CH, et al. Effectiveness and safety of early medication abortion provided in pharmacies by auxiliary nurse-midwives: A non-inferiority study in Nepal. PLoS One. 2018;13(1): e0191174.
12. Ngo TD, et al. Comparative effectiveness, safety and acceptability of medical abortion at home and in a clinic: a systematic review. Bulletin of the World Health Organization. 2011;89:360–70.
13. World Health Organization, WHO recommendations on self-care interventions: self-management of medical abortion. 2022, World Health Organization.
14. LaRoche KJ, Foster AM. "It gives you autonomy over your own choices": A qualitative study of Canadian abortion patients' experiences with mifepristone and misoprostol. Contraception. 2020;102(1):61–5.
15. World Health Organization, Health workforce requirements for universal health coverage and the sustainable development goals.(human resources for health observer, 17). 2016.
16. Morhee, R. and E. Morhee, Overview of the law and availability of abortion services in Ghana. Ghana medical journal, 2006. 40(3).
17. Ministry of Health/Ghana Health Service, Comprehensive Abortion Care Services Standards and Protocols 2021, Ministry of Health/Ghana Health Service: Accra.
18. Creswell, J.W. and J.D. Creswell, Research design: Qualitative, quantitative, and mixed methods approaches. 2017: Sage publications.
19. Gross K, et al. Timing of antenatal care for adolescent and adult pregnant women in south-eastern Tanzania. BMC Pregnancy and Childbirth. 2012;12:1–12.
20. Branum AM, Ahrens KA. Trends in timing of pregnancy awareness among US women. Maternal and Child Health Journal. 2017;21(4):715–26.
21. Abubeker FA, et al. Medical termination for pregnancy in early first trimester (≤ 63 days) using combination of mifepristone and misoprostol or misoprostol alone: a systematic review. BMC Women's Health. 2020;20(1):142.
22. Schaff EA, et al. Vaginal misoprostol administered at home after mifepristone (RU486) for abortion. J Fam Pract. 1997;44(4):353–60.
23. Zikopoulos KA, et al. Early pregnancy termination with vaginal misoprostol before and after 42 days gestation. Human Reproduction. 2002;17(12):3079–83.
24. Chai J, Wong CYG, Ho PC. A randomized clinical trial comparing the short-term side effects of sublingual and buccal routes of misoprostol administration for medical abortions up to 63 days' gestation. Contraception. 2013;87(4):480–5.
25. Sheldon WR, et al. Early abortion with buccal versus sublingual misoprostol alone: a multicenter, randomized trial. Contraception. 2019;99(5):272–7.
26. Gambir K, et al. Effectiveness, safety and acceptability of medical abortion at home versus in the clinic: a systematic review and meta-analysis in response to COVID-19. BMJ global health. 2020;5(12): e003934.
27. Aiken, A.R., et al., Safety and effectiveness of self-managed medication abortion provided using online telemedicine in the United States: A population based study. The Lancet Regional Health-Americas, 2022: p. 100200.
28. Nimmon L, Stenfors-Hayes T. The "Handling" of power in the physician-patient encounter: perceptions from experienced physicians. BMC Medical Education. 2016;16(1):1–9.
29. Adebayo CT. Physician-Patient Interactions in Nigeria: A Critical-Cultural Perspective on the Role of Power. Journal of Intercultural Communication Research. 2021;50(1):21–40.
30. Fadare JO, et al. Knowledge of medical ethics among Nigerian medical doctors. Nigerian medical journal: journal of the Nigeria Medical Association. 2012;53(4):226.
31. Ghana Statistical Service, Ghana Health Service, and ICF International, Ghana Maternal Health Survey 2017. 2018: Accra, Ghana.
32. Ralph LJ, et al. Accuracy of self-assessment of gestational duration among people seeking abortion. American Journal of Obstetrics and Gynecology. 2022;226(5):710.e1-710.e21.
33. Ghana Statistical Service, Ghana Health Service, and ICF International, Demographic and Health Survey. 2015, GSS, GHS, and ICF International: Rockville. USA: Maryland; 2014.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.