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Drug sellers' knowledge and practices, and client perspectives after an intervention to improve the quality of safe abortion care outside of formal clinics in Nigeria

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ABSTRACT

Background In Nigeria, where abortion is legally restricted, individuals seek medication abortion drugs, including misoprostol, directly from pharmacies or drug sellers. However, knowledge of drug sellers or patent medicine vendors (PMVs) dispensation practices and women's experience with self-management is limited and research suggests poor quality of services. This study assesses the knowledge and practices of PMVs and women's experiences after a harm reduction intervention to improve the provision of medication abortion using misoprostol.

Methods We conducted a retrospective descriptive analysis of anonymised logbook data collected from 141 Nigerian PMVs who provided misoprostol for abortion to 4924 clients between February 2015 and July 2018. We conducted a descriptive analysis of self-reported misoprostol dispensation practices with data from a cross-sectional survey of PMVs (n=120) from June 2016 to December 2018. We collected data on women's experience obtaining misoprostol from 37 PMVs through a cross-sectional survey of women (n=260) from 4–19 June 2018.

Results For clients where the misoprostol dose dispensed was recorded (n=3784), 86% of clients were given 800 µg or more misoprostol, pain medication (97%) and a contraceptive method (92%). Most clients with an outcome recorded in the logbook (n=4431) had a complete abortion (86%). Almost all women reported that they would return to the PMV for future services (99%).

Conclusions The majority of PMVs dispensed misoprostol in appropriate dosages and provided clients with information on drug administration and methods of contraception. Interventions designed to improve PMVs' best practices around the provision of abortion care may help ensure the quality of services received by clients.

Key messages

- Patent medicine vendors (PMVs) can be an important source of abortion care in Nigeria where abortion is legally restricted.
- The majority of PMVs in this intervention dispensed misoprostol in appropriate dosages and provided clients with information on drug administration and methods of contraception.
- Interventions designed to improve PMVs' best practices around the provision of abortion care may help ensure the quality of services received by clients.

INTRODUCTION

Medication abortion, or the use of pills to end a pregnancy, is a safe and effective method that is increasingly available worldwide. World Health Organization (WHO) guidelines recommend the use of mifepristone-misoprostol for medication abortion or, in settings where mifepristone is not available, misoprostol alone.[1] Where abortion is legally restricted or access to services is limited, individuals may seek mifepristone and/or misoprostol directly from a pharmacy or drug shop and self-manage their abortion. WHO guidelines support self-management with mifepristone-misoprostol when access to a trained provider is available but, given limited evidence, does not endorse

self-management with misoprostol alone.[1] Evidence on people's experience obtaining misoprostol or mifepristone-misoprostol directly from pharmacies or drug sellers is limited.[2–4]

Abortion in Nigeria is legally allowed only to save a woman's life.[5] However, a study conducted in 2012 reported an annual incidence of 1.25 million abortions.[6] More recent data estimate nearly 1.8 million abortions annually or 41.1 per 1000 women aged 15–49 years; when including the experience of respondents' closest confidantes, the number of likely abortions in Nigeria rose to 2.7 million.[7] Nigeria has one of the highest maternal mortality rates in the world and unsafe abortion is a major contributor to maternal morbidity and mortality.[8–10]

Given Nigeria's restrictive abortion law, access to safe abortion services is limited in public hospitals where care is relatively affordable.[6] Instead, individuals seek care elsewhere, including by purchasing medications directly from pharmacies or drug sellers. In Nigeria, patent and proprietary medicine vendors or PMVs play an important role in the provision of basic healthcare services[11 12] including reproductive health,[13–16] though knowledge of their role in abortion care is limited.[3] PMVs are persons without formal training in pharmacy who sell orthodox pharmaceutical products in retail for profit. Many PMVs are known to have medical training, though this is not a requirement, and they often operate from shops.[12]

Misoprostol was first registered in Nigeria in 2006 for the treatment of postpartum haemorrhage.[17] A survey conducted in pharmacies and drug outlets in Lagos and Abuja in 2006 found misoprostol not well known or widely available.[18] Over a decade later, research suggests misoprostol is more widely sold in drug outlets and is increasingly used for abortion.[3 19] In 2014, the national task shifting guidelines allowed PMVs to stock misoprostol for the management of postpartum haemorrhage.[20] Mifepristone was registered in Nigeria in 2017 and is increasingly available and used for abortion care.

Given the high unsafe abortion rate and evidence of misoprostol availability and dispensing for abortion by PMVs, from 2015 to 2018 Ipas worked with Nigerian Ministry of Health officials in three states to improve PMVs' knowledge about and provision of misoprostol for comprehensive abortion care The present study uses monitoring and evaluation data collected during this intervention to: (1) document the post-training knowledge and practices for the provision of misoprostol for abortion by participating PMVs and (2) assess the experiences and satisfaction of women who obtained either abortion or post-abortion care from a participating PMV.

METHODS

Setting

Ipas collected data as part of the monitoring and evaluation activities of a harm reduction intervention designed to improve comprehensive abortion care by PMVs across three states in Nigeria from 2015 to 2018. PMVs were selected from a sampling frame developed through a physical search of PMV shops and snowball recruitment. Ipas recruited PMVs for the intervention if they were a nurse/midwife, community health extension worker (CHEW) or community health officer (CHO) with a current practising license. Participants were required to operate a patent medicine shop; be willing to attend training; already dispense or sell misoprostol and be willing to dispense and sell misoprostol for abortion post-training; and provide contraceptive services to willing clients. All participants attended a 3-day course training on abortion and post-abortion misoprostol regimens, screening, eligibility and contraindications, expected and potential adverse effects, complications and follow-up care. The intervention had 183 participating PMVs. Each PMV was trained on medication abortion provision using misoprostol and were linked with misoprostol suppliers and trained clinicians for referral and treatment of complications. Participants were required to record details about care provided to clients who received misoprostol in a logbook without any client's personal information (Figure 1S).

Project design and data collection

The intervention included two components: (1) assessments of PMV's post-training knowledge and practice undertaken as part of routine monitoring and evaluation with (A) review of client logbooks maintained by PMVs during the intervention and (B) a cross-sectional survey of PMV knowledge, attitude and practices around misoprostol provision and (2) a cross-sectional survey of women who purchased misoprostol from a selected group of the trained PMVs.

Review of logbook service records

Online supplemental figure 1S describes the intervention sample. Ipas trained 183 PMVs and 146 trained PMVs collected data prospectively on their misoprostol dispensation. Three PMVs who did not dispense misoprostol for induced abortion and two PMVs with incomplete logbook records were excluded from the analysis. Logbook data from 141 vendors collected from 1 February 2015 to 1 July 2018 are reported here.

Assessment of PMV knowledge and practice of provision of misoprostol for abortion

During the intervention, PMVs maintained a logbook recording the dispensation of misoprostol including dispensation date, client age and gestational age, service provided (post-abortion care or induced abortion), dose dispensed, pain management and contraception provided, and abortion outcome (ie, referred to another provider, complete abortion or abortion with complications). Ipas staff collected logbook entries at quarterly monitoring visits and entered data into Epidata.

Table 1 Description of abortion clients, medications dispensed and abortion outcome as recorded in patent medicine vendor logbooks*

Variable	Among clients provided misoprostol for induced abortion (n=4924) n	%
Age of client (years)††		
≤19	965	19.6
20–24	1457	29.6
25+	2498	50.8
Recorded gestational age of pregnancy (weeks)		
<13	4220	85.7
≥13	205	4.2
Missing	499	10.1
Misoprostol dose dispensed (µg)		
<800	533	10.8
800	2313	47.0
1000–1400	132	2.7
1600–2400	792	16.1
>2600	14	0.3
Missing	1140	23.2
Pain management provided	4876	99.0
Contraception provided‡		
Short-term method	3511	71.8
Long-term method§	974	19.9
No method	403	8.2
Abortion outcome		
Complete abortion	4224	85.8
Abortion with complication managed by PMV	33	0.7
Abortion with complication referred to another provider	174	3.5
Missing	493	10.0

*Data on post abortion care (PAC) clients excluded because of observed limitations in accurate PAC documentation.
†Data on age were missing for four clients.
‡Data on contraception provided were missing for 36 clients.
§Long-term methods included primarily women who received implants and a few who received intrauterine contraceptive devices.
PMV, patent medicine vendor.

Trained facilitative supervisors visited each shop quarterly and used a structured survey to assess misoprostol stocking and dispensing practices, patient eligibility determination, pain management practices, and standard follow-up care including provision of contraception. Data were collected on paper forms and entered into Epidata. Though the visits targeted all 141 participating PMVs, 21 PMVs were unavailable or unreachable at the time of the last visit to provide survey data. Therefore, 120 PMVs (n=120) who reported dispensing misoprostol were included in the analysis. The visits occurred between 28 June 2016 and 11 December 2018. Online supplemental figure 1S describes the sample of PMVs included in the intervention and the data analysis.

Cross-sectional survey of women obtaining abortion and post-abortion care from PMVs

Durign the period 4–29 June 2018, Ipas conducted a cross-sectional survey of clients who obtained misoprostol at a subsample of PMVs to assess the quality and acceptability of services provided. Drug shops (n=45) were purposely selected based on consistently high records of abortion and post-abortion clients. Women aged 18–49 years who had received services at the selected shops were eligible to participate, and all eligible women purchasing misoprostol during the data collection period were invited to participate (n=260).

A trained female research assistant interviewed clients in an area of the shop with audio and visual privacy. The interviewer obtained written consent before each interview and then collected data using a mobile data collection application on password-protected smart phone, which transferred data to a secure server daily. The study protocol was reviewed and approved by the Nigerian National Health Research Ethics Committee. Results were later shared with the PMVs.

Project definitions

The initial Ipas training used the 2012 WHO-recommended regimen for misoprostol-alone abortion for pregnancies <13 weeks' gestation: 800 µg misoprostol administered by vaginal or sublingual routes with up to three repeat doses of 800 µg administered at intervals of at least 3 hours, but for no longer than 12 hours.[21] Subsequent training incorporated modifications to the guidelines including information on a shortened dosing interval (3–4 hours) and use of buccal administration. PMVs assessed the outcome of the abortion at either a return visit or a telephone consultation and recorded one of three abortion outcomes in the logbook: (1) complete abortion (ie, no additional treatment required), (2) a complication managed by the PMV (eg, excessive bleeding or signs of suspected infection) or (3) a complication referred to a higher-level facility for additional treatment. A positive outcome was a complete abortion without complications.

Analysis

We conducted a descriptive analysis of the client characteristics and abortion outcomes recorded in PMV logbooks. We also describe PMVs' self-reports of dispensation practices as recorded in the cross-sectional survey and stratify the analysis by provider type (ie, nurse/midwife vs CHO/CHEW)). We describe clients' sociodemographic characteristics and experience as documented in the cross-sectional client survey and stratified by service requested (ie, abortion or

Table 2 Patent medicine vendors (PMVs)' report of misoprostol dispensation practices for induced abortion by type of PMV provider

	Nurse/midwife (n=98)		CHO/CHEW (n=22)		Total (n=120)		
Variable	**n**	**%**	**n**	**%**	**n**	**%**	**P value**
Dispense misoprostol without prescription*	97	98.9	22	100	119	99.1	0.535
Misoprostol dosage (µg) dispensed to help bring on a woman's period if she has missed a period†							<0.001
<800	0	0	1	4.5	1	0.8	
800	1	1.0	7	31.8	8	6.7	
1000–1400	5	5.1	14	63.6	19	15.8	
1600–2400	92	93.9	0	0	92	76.7	
Suggested route of misoprostol administration‡	**Nurse/midwife (n=98)**		**CHO/CHEW (n=22)**		**Total (n=120)**		
Vaginal	78	79.6	2	9.1	80	66.7	<0.001
Under tongue (sublingual)	84	85.7	22	100	106	88.3	0.169
In cheek (buccal)	5	5.2	19	86.4	24	20.2	<0.001
Approaches for estimating gestational age of pregnancy‡							
Last menstrual period	98	100	22	100	120	100	–
Bimanual exam	60	61.2	0	0	60	50	<0.001
Ultrasound scan	6	6.2	2	9.1	8	6.7	0.49
Does not estimate	1	1	0	0	1	0.8	0.815
Provide pain management§	94	96.9	21	95.5	115	96.6	
Pain management options provided‡							
Paracetamol	8	8.2	0	0	8	6.7	0.035
Diclofenac or Feldene	80	82.5	21	95.5	101	84.9	
Buscopan	0	0	1	4.5	1	0.8	
Available for follow-up consult	97	99	22	100	119	99.2	0.634
When advised to return‡							
Pain	68	69.4	22	100	90	75	0.011
Heavy bleeding	98	100	22	100	120	100	–
Fever	64	66	22	100	86	72.3	0.006
Unusual or bad smelling vaginal discharge	63	64.9	22	100	85	71.4	0.005
Feeling very sick	64	66	22	100	86	72.3	0.006
If no bleeding or cramping during 2 weeks after taking the pills	29	31.2	20	90.9	49	42.6	<0.001
Services provided for women who report they are still pregnant after taking misoprostol‡							
Take clinical history	66	67.3	20	90.9	86	71.7	0.019
Conduct a clinical examination	58	59.2	4	18.2	62	51.7	0.001
Refer to a facility	63	64.3	8	36.4	71	59.2	0.004
Reassure woman of outcome(s)	90	92.9	12	54.5	103	85.8	<0.001
Proportion of PMVs who report some clients experience complications	31	31.6	1	4.5	32	26.7	0.009
Services provided when complications arise	**Nurse/midwife (n=31)**		**CHO/CHEW (n=1)**		**Total (n=32)**		
First aid	31	100	0	0	31	96.9	<0.001
Give other/additional medications	0	0	1	100	1	3.1	<0.001
Refer to a facility	31	100	1	100	32	100	–

*One PMV was missing data on whether misoprostol was provided by prescription.
†Refers to dosage for abortion.
‡Multiple responses possible.
§Data on pain management were available for a subsample of PMVs (n=119).
CHEW, community health extension worker; CHO, community health officer; PMV, patent medicine vendor.

Table 3 Women's sociodemographic characteristics and how they learnt of service by type of service received from patent medicine vendors

Characteristic	Abortion (n=193) n (%)	Post-abortion care (n=67) n (%)	Total (n=260) n (%)	P value
Age (years)				0.903
15–19	17 (8.8)	7 (10.4)	24 (9.2)	
20–24	33 (17.1)	12 (17.9)	45 (17.3)	
25+	143 (74.1)	48 (71.6)	191 (73.5)	
Relationship status*				0.826
Married	132 (68.8)	47 (70.1)	179 (69.1)	
Living with partner, but not married	3 (1.6)	1 (1.5)	4 (1.5)	
Have a steady partner, but not living together	33 (17.2)	13 (19.4)	46 (17.8)	
Separated/ivorced	5 (2.6)	0 (0)	5 (1.9)	
No steady partner	19 (9.9)	6 (9)	25 (9.6)	
Educational attainment				0.707
No formal/some primary	15 (7.8)	5 (7.5)	20 (7.7)	
Completed primary	11 (5.7)	1 (1.5)	12 (4.6)	
Some secondary	22 (11.4)	6 (9)	28 (10.8)	
Completed secondary	16 (39.4)	30 (44.8)	106 (40.8)	
Some tertiary	31 (16.1)	13 (19.4)	44 (16.9)	
Completed tertiary	38 (19.7)	12 (17.9)	50 (19.2)	
Religious affiliation†				0.004
Catholic	30 (15.5)	22 (32.8)	52 (20)	
Non-Catholic	89 (46.1)	26 (38.8)	115 (44.2)	
Islam	73 (37.8)	19 (28.4)	92 (35.4)	
None	1 (0.5)	0 (0)	1 (0.4)	
Gestational age (weeks)†				
<13	188 (97.9)	62 (93.9)	250 (96.9)	0.108
≥13	4 (2.1)	4 (6.1)	8 (3.1)	
Heard or received abortion information in past year	137 (71)	38 (56.7)	175 (67.3)	0.03
Source of abortion information‡				
Friend	89 (65)	21 (55.3)	110 (62.9)	0.274
Family member	37 (27)	7 (18.4)	44 (25.1)	0.398
Medical provider	46 (33.6)	17 (44.7)	63 (36)	0.252
Pharmacist/TBA/CHEW	4 (2.1)	1 (1.5)	5 (1.9)	0.766
Radio/TV/internet/newspaper	23 (11.9)	13 (19.4)	36 (13.8)	0.126
Billboards/street theatre/pamphlet	4 (2.1)	1 (1.5)	5 (1.9)	0.766
Hotline	0 (0)	0 (0)	0 (0)	0
Peer educators/community leaders/women's group/community-based organisation	7 (3.6)	6 (9)	13 (5)	0.085
How learned about abortion services at specific PMV‡				
Friend	82 (42.5)	29 (43.8)	111 (42.7)	0.91
Family member	44 (22.8)	26 (38.8)	70 (26.9)	0.01
Medical provider	45 (23.3)	14 (20.9)	59 (22.7)	0.684
Pharmacist/TBA/CHEW	2 (1)	2 (3)	4 (1.5)	0.264
Radio/TV/internet/newspaper	4 (2.1)	4 (6)	8 (3.1)	0.111
Billboards/street theatre/pamphlet	2 (1)	0 (0)	2 (0.8)	0.403
Hotline	0 (0)	0 (0)	0 (0)	0
Peer educators/community leaders/women's group/community-based organisation	2 (1)	3 (4.5)	5 (1.9)	0.07

*One participant was missing data on relationship status.
†One woman was missing data on gestational age.
‡Multiple response question.
CHEW, community health extension worker; PMV, patent medicine vendor; TBA, traditional birth attendants.

post-abortion care). All analyses were conducted using SPSS (Version 25.0, 2017; IBM Corp., Armonk, NY, USA).

RESULTS

The vendors recorded dispensing misoprostol for induced abortion or post-abortion care to a total of 8571 clients. Approximately half the clients (57.4% or 4924/8571) were provided with misoprostol for induced abortion.

Table 1 describes the clients requesting misoprostol for abortion and their abortion outcome as recorded in PMV logbooks. Among those with a recorded gestational age (n=4425), most clients (96%) reported a gestational age less than 13 weeks. For clients where the misoprostol dose dispensed was recorded (n=3784), 86% of clients received 800 μg or more misoprostol. The PMV also provided pain medication (99.0%) and reported providing a contraceptive method (92%). Of clients with an outcome recorded in the logbook (n=4431), most (86%) had a complete abortion. A secondary analysis reporting rates of complete abortion by gestational age and misoprostol dose received is reported in online supplemental table 1S.

Table 2 provides more detail on the self-reported misoprostol dispensation practices of a subsample of PMVs (n=120) recorded in the cross-sectional survey. When asked the dosage dispensed to a client with a missed period who wanted to bring on her period, most nurses/midwives (94%) reported providing 800 μg misoprostol three times or more. CHO/CHEWs were more likely to report giving a lower dosage (ie, 800 μg misoprostol fewer than three times) but most (95%) still provided 800 μg or more. Both nurss/midwives and CHO/CHEWs recommended clients use an optimal route of administration (ie, vaginal, sublingual or buccal misoprostol)

All providers reported that they used a client's menstrual history to estimate gestational age (table 2). Sixty nurses/midwives also reported relying on a bimanual examination for assessing eligibility (61%) (p<0.001). Almost all PMVs (99%) also indicated they offered clients follow-up consultations. However, advice on when to return differed by provider type: nurses/midwives were less likely than CHO/CHEWs to counsel patients to return in the event of pain (70% vs 100%), fever (66% vs 100%), unusual or bad smelling vaginal discharge (65% vs 100%), feeling sick (66% vs 100%) or the absence of bleeding or cramping after taking misoprostol (31% vs 91%) (all p<0.05). For clients who reported that they were still pregnant after taking misoprostol, nurses/midwives were more likely than CHO/CHEWs to report that they would conduct a clinical examination (59% vs 18%, p=0.001) or refer the client to another health facility (64% vs 36%, p=0.004).

Table 3 describes the sociodemographic characteristics of clients (n=260) surveyed at a subsample of PMV sites (n=37) stratified by the type of care requested (ie, induced abortion vs post-abortion care). Women in both groups reported that family (27%) or friends (42%) informed them about the abortion services at the specific PMV where they sought care.

Table 4 describes women's PMV service experience. Most women (80%) reported that they were counselled on different treatment options, asked about their questions or concerns (90%) and given pain medication (94%). Women seeking both abortion and post-abortion care were informed about follow-up care (97%), when additional care is required (95%) and the risk of pregnancy post-abortion (97%). Almost all women reported that they would return to the PMV for future services (99%) or recommend the PMV to family and friends (100%).

DISCUSSION

This intervention provides information on trained Nigerian PMVs' dispensation of misoprostol for abortion and women's experience obtaining this service. Based on logbook data recording misoprostol dispensation to approximately 5000 clients, most women with a recorded outcome (86%) experienced a complete abortion without requiring either additional care by the PMV or referral to another provider. PMVs self-reported using standard methods for assessing gestational age, providing counselling on optimal routes of misoprostol administration (buccal, sublingual or vaginal), using appropriate drug prescriptions in line with international guidance, and providing some follow-up care and contraceptive services. Both nurses/midwives and CHOs/CHEWs provided all these services, although nurses/midwives were more likely to report using a clinical examination to confirm client eligibility or abortion completion or providing the WHO-recommended regimen of up to 2400 μg misoprostol. Clients interviewed at a subsample of trained PMVs confirmed that they received comprehensive care, including counselling on drug administration and contraception. Almost all women reported that they would return for the service, if needed, and would recommend it to a friend.

The intervention showed a high level of complete abortion without additional treatment. Assuming conservatively that all cases with missing outcomes (10%) required additional care, the rate of complete abortion in this sample, 86%, would still be in the range of effectiveness for misoprostol-alone regimens reported in clinical studies.[22 23] The rate of complete abortion found in this intervention is similar to rates reported from other studies assessing the effectiveness of self-managed misoprostol-alone abortion.[24]

This article has several methodological limitations. Data reported were collected as part of planned monitoring and evaluation activities and not a prospective study. PMVs were purposively selected, had prior clinical training and were licensed and thus

Table 4 Women's experience interacting with the patent medicine vendor (PMV) by type of service received from PMV

Experience	Abortion (n=193) n (%)	Post-abortion care (n=67) n (%)	Total (n=260) n (%)	P value
Counselled on different treatment options	159 (82.4)	48 (71.6)	207 (79.6)	0.06
Asked about questions or concerns	182 (94.3)	52 (77.6)	234 (90)	<0.001
Given sufficient information about care	191 (99)	67 (100)	258 (99.2)	1
Given pain medication	181 (93.8)	64 (95.5)	245 (94.2)	0.766
Type of pain medication received				0.055
Oral NSAID	144 (79.6)	60 (93.8)	204 (83.3)	
Oral paracetamol	8 (4.4)	1 (1.6)	9 (3.7)	
Intramuscular injection	18 (9.9)	3 (4.7)	21 (8.6)	
Other	11 (6.1)	0 (0)	11 (4.5)	
Informed about follow-up care	187 (96.9)	67 (100)	254 (97.7)	0.343
Informed about when additional care required	179 (92.7)	67 (100)	246 (94.60	0.024
Informed about risk of pregnancy post-abortion	185 (95.5)	66 (98.5)	251 (96.5)	0.454
Felt services were private	188 (97.4)	67 (100)	255 (98.1)	0.332
Services well explained	193 (100)	67 (100)	260 (100)	–
Allowed to express concerns	192 (95.5)	65 (97)	257 (98.8)	0.172
PMV was welcoming	193 (100)	67 (100)	260 (100)	–
Treated in non-judgmental way	188 (97.4)	67 (100)	255 (98.1)	0.413
Mean cost of service (Nigerian Naira) among clients who paid for service (SD) (range)	2113 (1590) (1–15,000)	1348 (642) (1450–3000)	1967 (1487) (1–15,000)	0.002
No payment	11 (5.7)	24 (35.8)	35 (13.5)	
Perceived affordability of service among clients who paid for service				0.149
Affordable	156 85.7	33 (76.7)	189 (84)	
Cost too much	26 (14.3)	10 (23.3)	36 (16)	
Reside in same community as PMV shop	145 (75.1)	56 (83.6)	201 (77.3)	0.155
Counselled on contraception	186 (96.4)	64 (95.5)	250 (96.2)	0.721
Methods counselled on*				
Condoms	139 (72)	52 (77.6)	191 (73.5)	0.372
Pills	152 (78.8)	54 (80.6)	206 (79.2)	0.749
DMPA	159 (82.4)	57 (85.1)	216 (83.1)	0.613
IUCD	151 (78.2)	55 (82.1)	206 (79.2)	0.503
Implant	154 (79.8)	51 (76.1)	205 (78.8)	0.526
Female sterilisation	35 (18.1)	26 (38.8)	61 (23.5)	0.001
Periodic abstinence/withdrawl	47 (24.4)	28 (41.8)	75 (28.8)	0.007
Felt coerced to accept a method	14 (13.3)	8 (21.1)	22 (15.4)	0.258
Received a contraceptive method	105 (54.4)	38 (56.7)	143 (55.6)	0.743
Method received				
Condoms	18 (17.1)	6 (15.8)	24 (16.8)	
Pills	18 (17.1)	11 (28.9)	29 (20.3)	
Injection/Depo-Provera	45 (42.9)	11 (28.9)	56 (39.2)	
IUCD	8 (7.6)	3 (7.9)	11 (7.7)	
Implant	15 (14.3)	7 (18.4)	22 (15.4)	
Learnt about new contraceptive method from PMV†	107 (55.4)	48 (71.6)	155 (59.6)	0.02
Would return to PMV for future services	192 (99.5)	67 (100)	259 (99.6)	0.555

Continued

Table 4 Continued

Experience	Abortion (n=193) n (%)	Post-abortion care (n=67) n (%)	Total (n=260) n (%)	P value
Would recommend PMV to family or friends	193 (100)	67 (100)	260 (100)	
Degree of satisfaction				
Very satisfied	166 (86)	47 (70.1)	213 (81.9)	0.005
Mostly satisfied	25 (13)	20 (29.9)	45 (17.3)	
Somewhat satisfied	2 (1)	0 (0)	2 (0.8)	
Not at all satisfied	0 (0)	0 (0)	0 (0)	

*Multiple response question.
†A new method refers to any modern contraceptive method previously unknown to the client.
DMPA, depot medroxyprogesterone acetate; IUCD, intrauterine contraceptive device; NSAID, non-steroidal anti-inflammatory drug; PMV, patent medicine vendor.

may not be representative of PMVs without formal medical training. The client logbook did not record the severity or nature of specific complications experienced or how and when the abortion outcome was confirmed and thus may not reflect all the care that the woman received during her treatment. Some women presenting for abortion services may have requested treatment for post-abortion care given stigma around abortion. These patients are not included in the analysis of the abortion logbook data. The PMVs included in the client exit interviews were selected purposively based on the reported number of women receiving services, hence the quality of services reported may not reflect the experiences of women receiving care from PMVs with low clientele numbers. Also validating the results with hospital records or with a subset of women themselves may produce different results. We also acknowledge the risk of sourcing data mainly from the PMVs who are affiliated with the organisation and are part of the intervention. Still, despite these limitations, we believe that these results show that trained PMVs can provide high-quality abortion services.

CONCLUSIONS

Thousands of women seek abortion care from PMVs, demonstrating that they are an important source of abortion care in Nigeria where abortion is legally restricted. The majority of PMVs in this intervention all had prior professional clinical training, dispensed misoprostol in appropriate dosages, and provided clients with information on drug administration and methods of contraception. Interventions designed to improve PMVs' best practices around the provision of abortion care may help improve the quality of services received by clients. Increasing women's access to accurate information and quality medication for abortion care through PMVs may contribute toward a reduction in Nigeria's mortality and morbidity due to unsafe abortion. Future research and intervention efforts should continue to focus on improving PMVs' training on medication abortion as well as informing women about best practices related to abortion self-care as outlined in the 2019 WHO guideline on self-care and medical management of abortion.

Contributors AJC and KS conceptualised the patent medicine vendor (PMV) evaluation, AC, KS, YAA, ABO and BO drafted the manuscript with input from OO. KS, YAA and ABO managed the analysis of the PMV logbook and client exit interview (CEI) data with input from all authors into the interpretation of the results. All authors contributed to revising the manuscript and approved the final version.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not required.

Ethics approval The National Health Research Ethics Committee in Nigeria approved the protocol for the cross-sectional survey of women seeking care from the patent medicine vendors (PMVs). The survey of providers and analysis of case record data from participating PMVs were undertaken as part of routine monitoring and evaluation activities associated with the intervention.

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Data availability statement Data are available upon reasonable request. Deidentified client service, client exit interview and sites survey data that underlie the results reported in this article are available upon reasonable request to the corresponding author (abiolaa@ipas.org) by researchers who provide a methodologically sound proposal following publication.

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