

# IUD discontinuation rates, switching behavior, and user satisfaction: findings from a retrospective analysis of a mobile outreach service program in Pakistan

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**Background:** In Pakistan, the uptake rate for the intrauterine device (IUD) is very low at 2.5%. The most popular modern contraceptive methods in Pakistan are female sterilization and use of condoms. The Marie Stopes Society established its mobile outreach service delivery program with the aim of increasing use of modern quality contraceptive services, including the long-term reversible IUD, by women living in hard-to-reach areas. The present study attempts to assess IUD discontinuation rates and associated factors, including switching behavior and level of satisfaction with this type of service delivery.

**Methods:** Using a cross-sectional approach, we contacted 681 women who had received an IUD from the Marie Stopes Society mobile outreach program during July and August 2009. Successful interviews were conducted with 639 of these women using a structured questionnaire. The data were analyzed with Stata 11.2 using simple descriptive Chi-square and Cox proportional techniques.

**Results:** Analysis revealed that 19.4% (95% confidence interval 16.3–22.5) of the women discontinued use of their IUD at 10 months and, of these women, the majority (69.4%) cited side effects as the main reason for discontinuation. Other factors, such as geographical catchment province, age of the woman, history of contraceptive use before IUD insertion, and side effects following insertion of the device, were found to be significantly associated with IUD. Amongst the women who had their IUD removed, 56.5% did not switch to any other contraceptive method, while 36.3% switched to either short-term or traditional methods, such as withdrawal, rhythm, and folk methods. Degree of satisfaction with the device was also significantly associated with discontinuation.

**Conclusion:** Early discontinuation and not switching to another contraceptive method increases the risk of unplanned pregnancy. Health care workers should be trained in managing clients' concerns about the IUD to prevent discontinuation and providing counseling services for clients to select an alternative contraceptive method if they decide to discontinue.

**Keywords:** intrauterine device, mobile outreach services, discontinuation, Pakistan

## Introduction

The intrauterine device (IUD) is one of the most effective of the modern methods of contraception, is reversible, and can be used for an extended period of time.<sup>1</sup> Worldwide, the rate of IUD use is 14%, with the highest rates of use in Asia (18%), followed by Europe (12%).<sup>2</sup> Because of a lack of accurate and up-to-date information, this method of contraception is underused in some parts of the world.<sup>3</sup> Although IUD use reaches 40% in some countries, like China, Uzbekistan, and Vietnam, rates are

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low in other parts of Asia, and particularly so in Pakistan (Table 1).<sup>2</sup>

Despite being the sixth most populous country in the world, with a population of 174 million and an annual growth rate of 1.8%,<sup>4</sup> Pakistan lags well behind most countries in terms of human development, with an overall ranking of 105 in the Human Development Index; this index provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living (measured by purchasing power parity and income).<sup>5</sup> Although the National Maternal and Child Health Policy comprehensively focused on the maternal, newborn, child health, human resources development, and family planning components of service delivery, it unfortunately failed to achieve the anticipated results.<sup>6</sup> Furthermore, Pakistan is a country in which approximately 28,000 maternal deaths occur annually due to preventable pregnancy-related complications, with hemorrhage, obstructed labor, puerperal sepsis, and toxemia of pregnancy being the major causes of mortality.<sup>7,8</sup> In 2008, Pakistan was reported to be amongst the six countries that contribute to more than 50% of maternal deaths worldwide.<sup>7</sup> Moreover, an estimated 890,000 induced abortions occur annually in Pakistan, with one in seven pregnancies being terminated by induced abortion.<sup>9</sup>

On the other hand, the unmet need for contraception in Pakistan stands at 25% and the total fertility rate is 4.1, where one in four is an unwanted birth. However, the total fertility rate increases to 4.5 amongst rural counterparts and

**Table 1** Rates of intrauterine device (IUD) use in Asian countries<sup>2</sup>

Country	Use of IUD (%)
Afghanistan	1.0
Bangladesh	0.9
Bhutan	3.4
India	1.7
Iran	7.6
Maldives	0.8
Nepal	0.7
Pakistan	2.5
Sri Lanka	0.3
Philippines	3.7
Jordan	22.6
Turkey	16.9
Kazakhstan	36.2
Indonesia	4.9

**Table 2** Percentage distribution of contraceptive method mix in Pakistan<sup>2</sup>

Contraceptive method	Percent of method mix
Female sterilization	24.1
Male sterilization	0.0
Pill	7.0
IUD	9.3
Injectable	10.0
Implant	0.0
Condom	20.0
Rhythm	5.2
Withdrawal	22.2
Folklore method	1.1

**Abbreviation:** IUD, intrauterine device.

5.8 amongst the poorest group, where more than one birth is considered unwanted.<sup>8</sup> Current use of modern contraception is around 19%,<sup>2</sup> with the most common contraceptive methods being either permanent (female sterilization) or short-term (use of condoms). Use of long-term reversible methods is very low or negligible, with only 2.5% of married women using the IUD (Table 2).<sup>2</sup> The aforementioned indicators are worse among the rural population, which comprises two-thirds of the total population of the country.

During 2001, IUD was the second most popular reversible modern contraceptive method used in Pakistan, representing a 17% share of the method mix, compared with 11% in the mid-1980s.<sup>10</sup> Surprisingly, awareness of the IUD and its use among the population has reduced over time,<sup>2</sup> and, as a result, the IUD currently accounts for only 9.3% of the method mix.<sup>2</sup> Moreover, its use is lower still in the rural population.<sup>2,8</sup> There are no data available to account for this downward trend in awareness and utilization of the IUD in Pakistan over this period of time, but it might have been caused by emphasis on the part of the public sector and vertical programs on permanent and short-term methods. Because use of long-term contraception is very low in Pakistan, it is important to know the IUD discontinuation rate in particular, in view of the fact that it is more cost-effective than a contraceptive implant. Both worldwide<sup>11</sup> and in Pakistan, there are scant data on IUD use; surveys across several countries often do not capture this information, including the last Pakistan Demographic and Health Survey.<sup>8</sup> However, a recent survey conducted in 2011 with clients of Social Franchise Network (ie, a business model in which a franchising organization provides licenses to the independent providers or service delivery outlets to operate under its brand name<sup>12</sup>) in Sindh and Punjab provinces documented IUD discontinuation rates of 16.3%, 18.8%, and 22.7% after 6, 12, and 24 months, respectively.<sup>12</sup> In addition, a small-scale, double-blind clinical study in Pakistan

documented 6-month and 12-month discontinuation rates of 3% and 8%, respectively, for the Multiload (copper 375 IUD; Multilan AG, Pfäffikon, Switzerland) and 6-month and 12-month discontinuation rates of 11% and 7%, respectively, for the Copper-T (copper 380 IUD; Medico Techno PTE Ltd, Singapore).<sup>13</sup> Unpublished data from a survey of 29 districts in Pakistan also report 12-month IUD discontinuation rates of up to 23%.<sup>14</sup>

The research evidence demonstrates that addressing unmet needs for contraception can have a positive impact on maternal mortality, and converting users of short-term contraceptive methods to long-acting methods like the IUD can significantly reduce unwanted pregnancies and pregnancy-related maternal deaths.<sup>6</sup> The Pakistan Population Policy also seeks to promote contraception by improved access to quality reproductive health services.<sup>8</sup> However, at the health services level, lack of access to and availability of contraceptives, trained staff, quality of care and responsiveness, outreach, and services have been identified as the key reasons behind the high unmet family planning needs in Pakistan.<sup>6</sup> According to recent data, more than 30% of primary care facilities in Pakistan are not operational.<sup>16</sup> As a result, limited services are provided to the rural and periurban population.<sup>17</sup> Along with poor quality services, limited access has been largely held responsible for the low rates of contraceptive use.<sup>18</sup>

The Marie Stopes Society (MSS) established its mobile outreach program in the early 1990s in order to increase access and provide coverage for women living in hard-to-reach areas, particularly targeting poor and underserved women with limited access to primary care health facilities and a high unmet need for family planning. The mobile outreach model provides a wide range of quality contraceptives at an existing public health facility through its community health workers, who in most cases are female. Where no facilities are available, outreach teams work from a tent or a van. The duration of the outreach camp clinic and the frequency with which the outreach team return to each location depend on the local level of demand. According to Marie Stopes International (MSI),

MSI uses a mobile outreach model to provide affordable (or free), high quality LAPM [long-acting and permanent method] services to women living in rural and hard to reach areas. Sensitization and demand-generation are conducted in advance of outreach visits, often with assistance from community health workers. In most MSI programmes, the mobile outreach teams make use of existing public health clinics or hospitals but in some cases they use other facilities such as schools. Where no facilities are available, outreach

teams work from a tent or a van. The frequency with which outreach teams return to certain locations, as well as the duration of each visit, depends on the level of demand. The general MSI mobile outreach team is comprised of five individuals: two nurses, a sexual and reproductive health counselor, one healthcare assistant and one driver/nurse aid, but this varies by country. MSI outreach programmes are expected to implement high quality clinical standards and rigorous follow-up systems that allow women to access medical advice post-procedure. According to MSI clinical standards, women should be given appropriate pre and post procedure counseling on how to deal with side effects, when to come back for a follow-up visit, and where and how to seek medical advice when needed. MSI outreach programmes provide the full range of contraceptive methods. In many cases, the government partner where outreach is taking place already offers short term methods and therefore MSI complements this service provision by focusing on unavailable methods (usually LAPMs). In 2010, 73% of LAPMs provided by MSI (globally) were delivered via outreach services.<sup>19</sup>

Outreach programs are widely criticized for not providing backup support for their clients and for a lack of continuity of care,<sup>20</sup> so the MSS implements a rigorous follow-up system accessible to women needing post-procedural advice. Generally, where the MSS outreach service is operating, public health facilities either provide no contraceptives or offer only short-term methods, so the MSS focuses more on the less readily accessible long-term methods, including the IUD. In 2009, the MSS provided a total of 34,360 IUD services across Pakistan. The objective of the present study was to assess the socioeconomic profile of IUD users at mobile outreach services, along with discontinuation rates and reasons for discontinuation at 10 months following insertion, switching behavior, and level of satisfaction with the service.

## Materials and methods

### Design and setting

A cross-sectional study was conducted at six randomly selected districts in the Sindh (Nawabshah and TandoAllayar) and Punjab provinces (Rawalpindi, Khanewal, Bhawalpur, and Lodhran). The sociodemographic characteristics of each district varied according to the geographic location in each province.

A multistage cluster sampling strategy with stratification was used to select the study participants. At first, two provinces (Punjab and Sindh) were purposively selected from four, and Balochistan and Khyber Pakhtoonkhwa were dropped due to a bad law-and-order situation. Six districts were selected randomly from a pool of 59 districts across

the Sindh and Punjab provinces as a feasible sample in view of the practical constraints of time, budgeting, and logistics. All the women ( $n = 681$ ) who received IUD services through the MSS mobile outreach program in the 9–10-month period surveyed (July–August 2009), aged 15–49 years, and willing to give their informed consent, were invited to participate in the study. Lists of these women, including their contact details, were obtained from the MSS management information system. The study protocol was reviewed and approved by the Research, Monitoring and Evaluation Department of Marie Stopes International, London, UK.

## Data collection and management

We located the selected study participants via MSS outreach workers who, in most cases, were local residents and those mainly responsible for increasing awareness and demand for contraceptive services among the target population. We made three attempts to contact households found to be locked (ie, no one at home) or with women away from home temporarily at the time of our visit. The third attempt to contact such households was made on the last day of the survey, to have the maximum probability of contacting the women selected for this survey.

For data collection, we used the same semi-structured questionnaire as that used in a previous study conducted in the Philippines.<sup>21</sup> The questionnaire included items on client profile, discontinuation of contraception according to method and reasons for this, source used for removal, method-switching behavior, and client satisfaction with the services provided by the MSS. For cultural reasons, we engaged and trained local female enumerators to use the questionnaire. These enumerators conducted face-to-face interviews with the study participants in the privacy of their own homes, and each interview took 15–20 minutes on average. No case was reported where a woman experienced a life-threatening complication requiring hospitalization and resulting in disability, incapacity, or death. Interviews were carried out in April 2010. Data were double-entered into Visual FoxPro version 6.0 (Microsoft Corporation, Redmond, WA, USA). The survey data were not linked to medical records because very minimal information is captured on the patient register at the time of service provision.

## Statistical analysis

Descriptive analyses were run to analyze sociodemographic and health service indicators. Potential risk factors for IUD discontinuation during the follow-up period were sought using univariate and multivariate Cox regression. The aim

of this analysis was to determine the adjusted effect of each potential risk factor on the outcome, so the multivariate model was developed by simply including all potential risk factors irrespective of their statistical significance ( $P$ -value) level. The Pearson Chi-square test was also used to test for an association between degree of satisfaction and IUD discontinuation. Data for IUD insertion and discontinuation were counted as a single record. Stata version 11.2 (Stata Statistical Software, Release 11; StataCorp LP, College Station, TX, USA) was used for the analysis.

## Results

A total of 681 women were approached, of whom 639 (93.8%) gave their informed consent to be interviewed. Forty-two women were excluded because of relocation from the area ( $n = 18$ , 2.6%), inability to be located due to incomplete contact information ( $n = 11$ , 1.6%), and being away from their homes at the time of the survey ( $n = 13$ , 2.0%). The results reported here are based on data from the 639 women who were successfully interviewed.

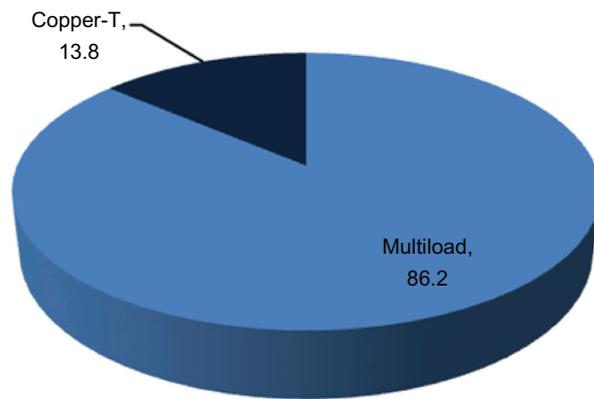
Approximately two-thirds of the women interviewed were from the Punjab province. Their mean age was  $30 \pm 4.7$  years, and half of them had no formal education. One-fifth had 1–2 children, 43% had 3–4 children, and 37.9% had at least five children (Table 3).

Long-term effectiveness of the device was cited by the majority (66.0%) of the women as their reason for choosing an IUD for contraception. A further 16.7% of women reported

**Table 3** Sociodemographic characteristics of women who had an IUD inserted between July and August 2010

Characteristics	(%)
<b>Province</b>	
Punjab	67.5
Sindh	32.5
<b>Age distribution (years)</b>	
>19–25	16.9
>25–35	71.1
>35–49	12.1
Mean $\pm$ SD	$30 \pm 4.7$
<b>Education level</b>	
No formal education	50.9
Primary	32.9
Secondary	13.0
Post-secondary	3.3
<b>Number of live children</b>	
1–2	19.4
3–4	42.7
5+	37.9
Mean $\pm$ SD	$4.1 \pm 1.8$

**Abbreviations:** IUD, intrauterine device; SD, standard deviation.



**Figure 1** Percentage distribution of clients using IUD by its type.  
**Abbreviation:** IUD, intrauterine device.

accessibility as their reason for choosing an IUD, 11.7% cited encouragement by their community health worker, 9.2% mentioned affordability, 8.8% reported fewer side effects with the IUD, and the remaining 5.5% had chosen the IUD as a result of encouragement by someone else who was satisfied with the IUD as a method of contraception. Most (88.4%) of the women had heard about the outreach program from MSS staff, 2.7% from a previous outreach client, 2.4% from a government clinic or health worker, 1.9% from a private doctor, and the remaining 4.7% from other sources. Eighty-six percent of the women had a Multiload and 13.8% had a Copper-T (Figure 1). Approximately 97% of the IUD users were informed by a service provider about where to go to report side effects or complications.

When followed up at 10 months, nearly one-fifth (19.4%, 95% confidence interval [CI] 16.3–22.5) of the women had discontinued IUD use at a mean ( $\pm$ standard deviation) duration of  $7.7 \pm 2.1$  months. At the end of the first month, the IUD discontinuation rate was 1.9%, which increased up to 5.3% by the end of the third month. Importantly, the highest rate of IUD discontinuation (15.5%) was recorded at the sixth month following insertion. By the end of 10 months, 19% of the IUD users had discontinued using the IUD (see Table 4).

Among the women who had had their IUD removed, the majority (69.4%) cited side effects (bleeding 45.2%, pain and other side effects 12.1%) as the main reason for discontinuation. Fifteen percent had had their IUD removed because they wished to become pregnant, 4% reported that their husband or another family member disapproved of the device, and 4.8% reported switching to a permanent method after expulsion of the device. IUD removals were mostly performed by government facilities (41.9%), followed by private facilities (34.7%), then MSS clinic and traditional birth attendants (8.9% each). Finding IUD removal services was reported to be “very easy” or “easy” by 94.6% of the women, and almost four-fifths reported that they had had to travel less than 1 hour to have their IUD removed. Further, three-fifths of the women had had their IUD removed free of charge, while the median amount charged for those who paid for this service was 50 Pakistani rupees (US\$0.56).

The univariate and multivariate analysis in Table 5 shows that women in the Punjab province had a significantly higher risk (1.84, 95% CI 1.21–2.81;  $P = 0.005$ ) of IUD discontinuation compared with women from the Sindh province. Similarly, women aged 25–35 years and 35–49 years of age were more likely to discontinue the IUD than women aged  $\leq 25$  years. Moreover, women not using any contraceptive method before the IUD had a significantly higher risk (2.41, 95% CI 1.63–3.55;  $P < 0.001$ ) of discontinuation than women who had been practicing contraception. Women who experienced side effects after IUD insertion had a significantly higher likelihood (9.78, 95% CI 6.21–15.38;  $P < 0.001$ ) of having their IUD removed than women who had not experienced side effects. Number of live children, educational status, and type of IUD were not associated with IUD discontinuation.

Three-fifths of the women reported that they did not experience any side effects after insertion of their IUD. Among those who did experience side effects, 45.7% reported bleeding, 28.7% reported pain, 16.1% reported discharge, 7.9% reported

**Table 4** Life table analysis for crude cumulative discontinuation probabilities

Time (months)	Women with IUD at beginning of study period (n)	Women who discontinued IUD (n)	Probability of discontinuation	Cumulative probability of discontinuation
<1	639	12	0.0188	0.0188
2	627	15	0.0235	0.0423
3	612	7	0.0110	0.0532
3–6	605	65	0.1017	0.1549
6–10	540	25	0.0391	0.1941
>10	515			

**Abbreviation:** IUD, intrauterine device.

**Table 5** Unadjusted and adjust hazard ratios for IUD discontinuation at 10 months, by sociodemographic and other reproductive health risk factors

Characteristics	Unadjusted HR (95% CI)	P-value	Adjusted HR (95% CI)	P-value
<b>Province</b>				
Sindh	1		1	
Punjab	1.42 (0.99–2.04)	0.056	1.84 (1.21–2.81)	0.005
<b>Age distribution (years)</b>				
≤25	1		1	
>25–35	2.62 (1.37–5.02)	0.004	4.83 (2.32–10.07)	<0.001
>35–49	1.39 (0.58–3.35)	0.458	2.96 (1.09–8.08)	0.034
<b>Education level</b>				
No formal education	1		1	
Primary	0.93 (0.62–1.41)	0.744	0.81 (0.53–1.23)	0.323
Secondary	1.30 (0.78–2.15)	0.315	1.33 (0.77–2.31)	0.310
Intermediate and post-secondary	1.63 (0.71–3.78)	0.252	2.06 (0.85–4.99)	0.117
<b>Number of live children</b>				
1–2	1		1	
3–4	0.93 (0.57–1.52)	0.785	0.62 (0.36–1.06)	0.078
5+	1.12 (0.70–1.82)	0.646	0.65 (0.37–1.12)	0.117
<b>Type of IUD</b>				
Multi-load	1		1	
Copper-T	1.27 (0.78–2.04)	0.335	1.48 (0.88–2.49)	0.138
<b>Contraception use before IUD insertion</b>				
Using a contraceptive method	1		1	
Not using any method	1.43 (1.00–2.06)	0.050	2.41 (1.63–3.55)	<0.001
<b>Experienced side effects post-IUD insertion</b>				
No	1		1	
Yes	7.22 (4.66–11.21)	<0.001	9.78 (6.21–15.38)	<0.001
<b>Reason for choosing IUD (most influential)</b>				
Suggested by someone	1		1	
Self-perceived	0.88 (0.55–1.39)	0.794	0.94 (0.58–1.52)	0.794

**Abbreviations:** CI, confidence interval; HR, hazards ratio; IUD, intrauterine device.

infection, and 1.6% reported nausea or allergy. The majority (57.9%) of women with side effects visited a doctor or went to the hospital, 22.1% used self-medication, and 20.1% did not seek any medical advice. Of those who required medical assistance, only 5.9% reported difficulty in obtaining it.

More than half (52.9%) of the women who had an IUD inserted had not used any form of contraception previously.

**Table 6** Method-switching behavior among women who underwent IUD removal

Contraceptive method after IUD removal	Method use before IUD insertion			Total
	Nonuser	Short-term method	Traditional	
Nonuser	55	15	0	70
Short-term	8	26	3	37
Traditional	7	1	0	9
Permanent	5	4	0	8
Total	75	46	3	124

**Abbreviation:** IUD, intrauterine device.

Approximately 40.5% of the women had switched from some form of short-term method (injection 13.8%, pill 11.1%, condom 15.7%), and a further 6.6% were practicing periodic abstinence to avoid pregnancy. Amongst the women who had had their IUD removed, 56.5% did not switch to any other contraceptive method. Whilst 29.8% of the women switched to some form of short-term method, 7.3% of the women had opted for a permanent method, and 6.5% reported switching to a traditional method of birth control, such as withdrawal, rhythm, or folk methods.<sup>8</sup> Table 6 shows the methods to which the women switched after having their IUD removed.

Of all the women, 85.3% reported being satisfied or very satisfied with the IUD insertion service, while around 7.0% felt neutral and/or unsatisfied. Nine out of ten stated that they would use the IUD in the future if necessary, and 95% said that they would recommend the IUD to friends and relatives.

Importantly, discontinuation of the IUD was found to be significantly associated with measures of patient satisfaction. Among women who discontinued the IUD, nearly half (49.2%) were satisfied or very satisfied with it compared with a reported satisfaction rate of 94.0% in women who were still using the method ( $P < 0.001$ ). Moreover, among the women who discontinued use of the IUD, 23.4% reported that they would not recommend the IUD to friends or relatives, in contrast with 0.6% of the women who continued to use the IUD ( $P < 0.001$ ). Similarly, among the women who continued to use the IUD, 88.5% said they would readily use the IUD again in the future if necessary, while 29.0% of those who had had their IUD removed reported the same ( $P < 0.001$ ).

Using total outreach service data provided by the MSS for 2009, ie, for 34,360 devices inserted, the estimated percentage change in IUD use was calculated for Pakistan. Calculations based on 24 million married women of reproductive age in the country showed that outreach services increased the IUD use nationally by 6.8%. A percentage increase of 5.5% was observed after adjusting for the discontinuation rate of 19.4% indicated by this study. Lastly, even taking into account a 6.2% nonresponse rate among women who discontinued the IUD, the outreach services still increased IUD use by 5.1%.

## Discussion

There is considerable disparity in health indicators between urban and rural areas in Pakistan.<sup>8</sup> The current health system in Pakistan has failed to achieve its desired outcomes. The ideal situation would be an improved health care system that facilitates access to family planning services, but taking services to the household doorstep is necessary in the meantime.<sup>16</sup> Outreach programs for family planning have been used with success in developing countries to bridge this urban–rural divide and increase access to contraceptive information, supplies, and services.<sup>22</sup> A multicountry review of mobile outreach services shows that these programs aim to reach the most poor and rural populations with provision of high-quality services.<sup>23</sup> IUDs are an effective long-term contraceptive with remarkably low adverse events, which are easily countered by the health benefits women and their families experience from the prevention of unintended pregnancy.<sup>24</sup> The present study indicates that most of the women surveyed received their IUD through mobile outreach services, were aged 25–35 years, had no formal education, and had more than two live children.

The majority cited “long-term effectiveness” as a reason for selecting the IUD as a family planning method. This trust in the IUD emphasizes the need and improving availability of this long-term reversible contraceptive method in the rural areas of Pakistan. In addition, our study confirms “word of mouth” as a prominent source of awareness about mobile outreach services, as suggested by previous studies.<sup>12,26</sup>

Provision of family planning via outreach programs raises the issue of continuity of a contraceptive method.<sup>20</sup> A discontinuation rate of 19.4% at 10 months was documented in this study, which is lower than the 12-month discontinuation rate of 33% reported for Bangladesh,<sup>25</sup> but is consistent with a previous study conducted in rural Pakistan among clients at a facility-based social franchise network (19.0%).<sup>12</sup> Further, our discontinuation rate is higher than that reported in the Philippines (12.9%)<sup>21</sup> and Vietnam (12.1%).<sup>26</sup> Our discontinuation rate in the 3 months following insertion was around 5%, which increased to 15% after 6 months, and increased further to 19% by 10 months of use. On the whole, comparison of our discontinuation rate with those in other studies indicates that the MSS program in Pakistan is able to maintain adequate continuation of the IUD as a contraceptive method.

The main reason for IUD discontinuation, ie, bleeding, was found to be consistent with previous studies conducted in a similar setting.<sup>12,21,23,25,26</sup> It was encouraging that none of the study participants experienced any adverse events. Experiencing side effects after IUD insertion was found to be strongly associated with discontinuation of the device (adjusted hazards ratio 9.82). Given that the mean time to discontinuation of the IUD was 7.7 months, we recommend that outreach workers visit women fitted with an IUD more frequently. Higher discontinuation rates (adjusted hazards ratio 4.86) amongst women aged 25–35 years may reflect a desire for pregnancy, because this is the most fertile age group in Pakistan.<sup>8</sup> Moreover, the higher discontinuation rate (adjusted hazards ratio 2.99) among women older than 35 years may be due to menopause.<sup>27</sup>

Of the women who had their IUD removed, 56.5% did not switch to any other form of contraception, and not using contraception after IUD removal (excluding the estimated 15% of women wishing to become pregnant) leaves 41% at risk of unwanted pregnancy.<sup>28–30</sup> Moreover, 36.3% of IUD users switched to less effective (short-term or traditional) birth control methods. The poor satisfaction reported by women who had discontinued IUD use needs further investigation to clarify how these women perceived the quality of care they

received, because this may help to identify ways to improve services and continuation of effective contraception.

The findings of the present study show that 97% of women fitted with an IUD were informed by a service provider about where to attend a follow-up visit in the event of complications. Amongst the women who discontinued use of an IUD, the majority attended either government or private facilities for removal, and 95% found it fairly easy to access removal services. Overall, our findings indicate that there is an adequate backup system in place for the clients of mobile outreach services in terms of providing services to women when needed.

Although this study yielded important information about the clients of a mobile outreach program, it also suffers from some limitations that need to be considered. The interviews were retrospective in nature, so the study findings are prone to recall bias. Moreover, data on indicators related to side effects were self-reported by the respondents, and not verified or confirmed by healthcare professionals. The relationship between risk factors and discontinuation in this paper is not causal, so the findings should be interpreted with caution. In addition, the study was conducted in only two provinces of Pakistan, and not throughout the entire country. Therefore, the results should be interpreted carefully and can only be generalized to communities having similar characteristics.

To the authors' knowledge, this study, conducted among clients of mobile outreach services, is the first of its kind in Pakistan. Our findings point to a high demand for long-term reversible contraception in rural areas. In order to minimize discontinuation, outreach health workers perhaps need to focus more on the high-risk women identified in this study and counsel them regarding continuation of this method, whilst providing important information on side effects and their management. Mobile outreach service providers would benefit from more training in managing clients' concerns about IUD to prevent their discontinuation and in counseling regarding use of another method for women who do discontinue the IUD. On the whole, use of the IUD services provided through the MSS mobile outreach during the study year increased by 5.0% nationally after adjusting for discontinuations. With an 80% method retention rate, our model, which primarily uses the existing setup for service provision and backup support for clients, may be of interest to stakeholders. Furthermore, prospective research should be conducted in the future to validate the findings of this study.

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## Disclosure

The authors report no conflicts of interest in this work.

## References

1. Trussell J. Contraceptive failure in the United States. *Contraception*. 2004;70:89–96.
2. United Nations Department of Economic and Social Affairs Population Division. *World Contraceptive Use 2011*. United Nations; 2011. Available from: <http://www.un.org/esa/population/publications/contraceptive2011/contraceptive2011.htm>. Accessed October 27, 2012.
3. Espey E, Ogburn T. Perpetuating negative attitudes about the intrauterine device: textbooks lag behind the evidence. *Contraception*. 2002;65:389–395.
4. United Nations Department of Economic and Social Affairs Population Division. *World Population Prospects: The 2008 Revision*. New York: United Nations; 2009. Available from: [http://www.un.org/esa/population/publications/wpp2008/wpp2008\\_text\\_tables.pdf](http://www.un.org/esa/population/publications/wpp2008/wpp2008_text_tables.pdf). Accessed October 26, 2012.
5. United Nations Development Programme. *Human Development Report 2010. 20th Anniversary Edition. The Real Wealth of Nations: Pathways to Human Development*. New York: Palgrave Macmillan; 2010. Available from: <http://hdr.undp.org/en/reports/global/hdr2010/>. Accessed October 26, 2012.
6. Shaikh BT. Unmet need for family planning in Pakistan – PDHS 2006–2007: it's time to re-examine déjà vu. *Open Journal of Contraception*. 2010;19:113–118.
7. Hogan MC, Foreman KJ, Naghavi M, et al. Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet*. 2010;375:1609–1623.
8. National Institute of Population Studies Pakistan, Macro International Inc. *Pakistan Demographic and Health Survey 2006–07*. Islamabad: 2008. Available from: <http://www.measuredhs.com/pubs/pdf/FR200/FR200.pdf>. Accessed October 26, 2012.
9. Sathar ZA, Singh S, Fikree FF. Estimating the incidence of abortion in Pakistan. *Stud Fam Plann*. 2007;38:11–22.
10. Eber M. *Comprehensive Approach to IUD Promotion in Pakistan*. USAID; 2006. Available from: <http://www.k4health.org/sites/default/files/Comprehensive%20approach%20to%20iud%20prom%20in%20pakistan.pdf>. Accessed October 26, 2012.
11. Ali MM, Sadler RK, Cleland J, Ngo TD, Shah IH. *Long-term Contraceptive Protection, Discontinuation and Switching Behaviour: Intrauterine Device (IUD) Use Dynamics in 14 Developing Countries*. London, UK: World Health Organization and Marie Stopes International; 2011. Available from: [http://www.who.int/reproductivehealth/publications/family\\_planning/Long\\_term\\_contraceptive\\_protection\\_behaviour.pdf](http://www.who.int/reproductivehealth/publications/family_planning/Long_term_contraceptive_protection_behaviour.pdf). Accessed October 26, 2012.
12. Azmat S, Shaikh BT, Hameed W, et al. Rates of IUCD discontinuation and its associated factors among the clients of a social franchising network in Pakistan. *BMC Womens Health*. 2012;12:8.
13. Khan SA, Ul Amin Z, Fouzia, Jadoon S. A comparative trial of copper T 380 and Cu 375 IUCD. *J Ayub Med Coll Abbottabad*. 2010;22:185–187.
14. Naz SS, Mahmood A, Miller PC. Contraceptive use dynamics in Pakistan. Proceedings of the International Conference on Family Planning: Research and Best Practices; Dakar, Senegal; November 29–December 2, 2011.
15. United States Agency for International Development. *Health Policy Initiative – Family Planning and the MDGs: Saving Lives, Saving Resources*. Washington DC: Futures Group International; 2012.

16. Nishtar S. *Reforming Pakistan's Mixed Health System. Choked Pipes*. Oxford, UK: Oxford Press; 2010.
17. Nishtar S. *Restructuring Basic Health Units – Mandatory Safeguards*. Pakistan Health Policy Forum; 2006. Available from: [http://www.heartfile.org/pdf/BHU\\_VP.pdf](http://www.heartfile.org/pdf/BHU_VP.pdf). Accessed October 26, 2012.
18. Sathar Z, Jain A, Ramarao S, ul Hague M, Kim J. Introducing client-centered reproductive health services in a Pakistani setting. *Stud Fam Plann*. 2005;36:221–234.
19. Reiss K, Nantayi L, Odong J, Ngo TD. *Providing Long-acting and Permanent Contraceptives Through Outreach in Rural Uganda*. London: Marie Stopes International; 2012. Available from: <http://www.mariestopes.org/sites/default/files/MSU%20Outreach%20Evaluation%20August%202012%20WEB.pdf>. Accessed December 23, 2012.
20. United States Agency for International Development. *Community Based Family Planning. Technical Update No. 8: Mobile Outreach Service Delivery*. USAID; 2010. Available from: [http://www.flexfund.org/resources/technical\\_updates/No8\\_MobileOutreachServiceDelivery.pdf](http://www.flexfund.org/resources/technical_updates/No8_MobileOutreachServiceDelivery.pdf). Accessed October 26, 2012.
21. Ngo TD, Pernito VL. *Discontinuation of IUDs Among Women Receiving Mobile Outreach Services in the Philippines, 2006–2008*. London, UK: Marie Stopes International; 2010. Available from: [http://www.mariestopes.org/sites/default/files/philippines\\_iud\\_discontinuation\\_web.pdf](http://www.mariestopes.org/sites/default/files/philippines_iud_discontinuation_web.pdf). Accessed October 26, 2012.
22. White JS, Speizer IS. Can family planning outreach bridge the urban-rural divide in Zambia? *BMC Health Serv Res*. 2007;7:143.
23. Eva G, Ngo TD. *MSI Mobile Outreach Services. Retrospective Evaluations from Ethiopia, Myanmar, Pakistan, Sierra Leone and Viet Nam*. London, UK: Marie Stopes International; 2010. Available from: [http://www.mariestopes.org/sites/default/files/outreach\\_web.pdf](http://www.mariestopes.org/sites/default/files/outreach_web.pdf). Accessed October 26, 2012.
24. Kaneshiro B, Aeby T. Long-term safety, efficacy, and patient acceptability of the intrauterine Copper T-380A contraceptive device. *Int J Womens Health*. 2010;2:211–220.
25. Alam ME, Kabir MA, Rahman MM. Overwhelming reasons for high IUD discontinuation in Bangladesh. *Jahangirnagar University Journal of Science*. 2009;32:123–135.
26. Park MH, Nguyen TH, Ngo TD. Dynamics of IUD use in Vietnam: implications for family planning services at primary health care level. *Int J Womens Health*. 2011;3:429–434.
27. Adhi M, Hasan R, Shoaib S, Tauheed S. Age and symptomatology of menopause in Karachi, Pakistan. *Pak J Physiol*. 2007;3:41–44.
28. Curtis SL, Evens E, Sambisa W. Contraceptive discontinuation and unintended pregnancy: an imperfect relationship. *Int Perspect Sex Reprod Health*. 2011;37:58–66.
29. Barden-O'Fallon JL, Speizer IS, White JS. Association between contraceptive discontinuation and pregnancy intentions in Guatemala. *Rev Panam Salud Publica*. 2008;23:410–417. Spanish.
30. Blanc AK, Curtis SL, Croft TN. Monitoring contraceptive continuation: links to fertility outcomes and quality of care. *Stud Fam Plann*. 2002;33:127–140.
31. Qureshi AM. Case study: does training of private networks of Family Planning clinicians in urban Pakistan affect service utilization? *BMC Int Health and Hum Rights*. 2010;10:26.

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