

A retrospective evaluation of the intrauterine device in a patient population in Buenos Aires, Argentina

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ABSTRACT

Background The intrauterine device (IUD) is a long-acting reversible contraceptive method that is safe for a wide range of women, including adolescents and nulliparous women. Globally, it is often underutilised due to misperceptions among patients. Examination of characteristics associated with IUD discontinuation including adverse effects and IUD expulsion can inform provider practices to improve contraception success and patient satisfaction with this method. We studied IUD performance at a public family planning clinic in Buenos Aires, Argentina, serving a predominantly immigrant, low-income population.

Methods We conducted a retrospective evaluation of 1047 IUD insertions between 2002 and 2007 with 5 years of follow-up data. We performed bivariate and survival analysis to examine characteristics associated with IUD discontinuation: adverse outcomes including pain, bleeding, and IUD expulsion, and time to removal.

Findings Of 1047 patients, only 188 (18%) had their IUD removed within 5 years. The main causes of IUD discontinuation were involuntary (38%) reasons such as an IUD expulsion and personal choice (34%) such as desiring pregnancy.

Conclusions Findings suggest overall good long-term performance with IUD insertion, with minimal complaints or adverse outcomes. These findings may help to support providers serving similar populations in promoting this method.

BACKGROUND

There are approximately 222 million women with an unmet need for contraception in developing countries worldwide and these women account for approximately 82% of all unintended pregnancies.^{1–4} Access to effective

Key message points

- ▶ The intrauterine device (IUD) is highly effective and well-tolerated by women; they expressed minimal or no complaints of adverse effects.
- ▶ Primary reasons for IUD discontinuation within the first 5 years of insertion were a desire to become pregnant or the device was involuntarily expelled.

modern contraception not only reduces unintended pregnancies but may also prevent pregnancy related morbidity and mortality.^{5–7}

Benefits of the intrauterine device (IUD) include its efficacy, long-term use, minimal to no interference during coitus, cost-effectiveness, and no recognised systemic effects.^{8–9} In South America, estimates suggest that approximately 7% of modern contraceptive users are currently using an IUD, compared to 28% of women globally.¹

In the middle-income nation of Argentina, the contraceptive prevalence among women of reproductive age (15–49 years) who are married or in a union increased from 53.4% to 70.4% between 1990 and 2010.^{10–11} An estimated 10.8% of contraceptive users in Argentina currently use an IUD as their form of contraception,¹² which is above average for South America, but well below the global average.¹

Long-term performance of the IUD remains understudied in Argentina. A better understanding of the IUD's performance and patient satisfaction with its use, based on findings from a clinic that frequently provides the IUD, may increase clinicians' comfort in

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recommending this method to their patients. Studies examining rates of IUD use in the USA have found that low rates of usage may be attributed to limited knowledge of the IUD's mechanism of action, its efficacy, side effects, and misperceived risks associated with its use among both women and clinicians.^{13–16}

In the current study, we performed a 5-year retrospective evaluation of IUD insertions between 2002 and 2007 at a public hospital in Buenos Aires, Argentina. We aim to describe the IUD's performance as well as patient experiences. We assessed reasons for discontinuation, time to removal and negative IUD-related outcomes.

To provide context for our study, Argentina's healthcare system is divided into three systems: the public sector, the health insurance sector obtained through employment, and the private sector. The public sector consists of public hospitals and health centres that provide medical care to individuals without insurance or the ability to pay for their healthcare costs.¹⁷ This study was conducted at a public hospital where patients can obtain family planning services, including the IUD, free of charge.

METHODS

Sample

We included a sample of 1161 women who had an IUD inserted at a family planning clinic of a public hospital in Buenos Aires. Patients were included in our study if they were aged 18 years or older (younger women were seen at a separate adolescent clinic) and had an IUD inserted at the same clinic between 2002 and 2007.

Data were collected in Spanish using statistical software SPSS V.21 (SPSS, Inc, Chicago, Illinois, USA) and translated from Spanish to English by our study team. The institutional review board of Stony Brook University and the Bioethics Committee of Hospital Bernardino Rivadavia approved the protocol and procedures of this study.

Measures

Patient characteristics collected from medical records included: nationality, education level, employment, marital status, age at IUD insertion, and all previous contraceptive methods used (see Appendix). We also retrieved reproductive history, including number of pregnancies, births, caesarean sections, and miscarriages. IUD insertion data included date of insertion and type of IUD (Cu-T380A, Cu-T375, LNG-IUS). Information collected during follow-up visits included: date of visit, condition of IUD, outcomes, and symptoms (see Appendix). Lastly, if an IUD was indicated as being removed during a follow-up visit, additional information on date of removal, reason and ease of removal were also collected (see Appendix).

We also created a binary variable to indicate if a woman was receiving an IUD for the first time or if

they were previous IUD recipients; this information was identified by contraceptive history reported on medical records.

Data for each IUD insertion were collected for up to 5 years from initial insertion date or until the IUD was removed or replaced. By subtracting date of insertion from date of removal, time to IUD removal was calculated in days for the survival analysis described in more detail below.

Statistical analysis

Frequency and percent distributions were obtained on patient characteristics, IUD-related symptoms, and reasons for discontinuation. Patient characteristics were examined by using χ^2 tests to examine significant differences among women who were receiving their first IUD and those who have had one previously. Percent distributions were also obtained for adverse IUD-related outcomes (see Appendix).

We examined reasons for IUD removal, classified as an involuntary reason, a complication, a personal preference, and none specified (see Appendix). These reasons were assessed in association with time to removal (2 weeks, 1 month, 3 months, 1 year, 3 years, and 5 years).

Kaplan–Meier survival curves examining time to removal were plotted separately for an involuntary reason, a complication, and a personal preference. Differences in these survival curves were assessed with a log-rank test. All analyses were conducted using statistical analysis software Stata V.12 (StataCorp, LP, College Station, Texas, USA).

RESULTS

A total of 1161 patients had an IUD inserted within the study timeframe. Our final analytic sample consisted of 1047 unique women who received the Cu-T380A or Cu-T375 IUD. We excluded three (<1%) women with the LNG-IUS; 59 (5.1%) women who were immediately lost to follow-up after their IUD insertion; and 52 (4.5%) women who were missing data for patient characteristics and outcomes of interest.

Age at insertion ranged from 20 to 53 years (mean age 32 years). About one-fifth (21%) of patients were nulliparous and 26% had three or more children (mean parity 2). Most women were Catholic (89%) and the majority were Argentinian (51%). The majority of women (86%) were domestically employed as a housewife or maid; only 3% were unemployed and 11% had other forms of employment. Of the 1047 women who had an IUD inserted during our study time frame, about one-third (350, 33%) were previous IUD recipients; of this sample, 99 (28%) were having an IUD replaced (Table 1).

Adverse outcomes included: 20 (1.9%) expulsions; 79 (7.5%) partial expulsions; 286 (27.3%) complaints of irregular bleeding; 17 (1.7%) cases of pelvic

Table 1 Sociodemographic characteristics

	Total (n=1047) n (%)	First time IUD user (n=697) n (%)	Previous IUD user (n=350) n (%)	χ^2 test of significance† p Value
Age (years)				
21–25	211 (20.2)	195 (28.0)	16 (4.6)	0.000***
26–30	267 (25.5)	209 (30.0)	58 (16.6)	0.000***
31–35	245 (23.4)	157 (22.5)	88 (25.1)	0.345
36–40	166 (15.9)	81 (11.6)	85 (24.3)	0.000***
41–45	116 (11.1)	47 (6.7)	69 (19.7)	0.000***
>45	42 (4.0)	8 (1.2)	34 (9.7)	0.000***
Nationality				
Argentinian	538 (51.4)	330 (47.4)	208 (59.4)	0.001**
Other nationalities	509 (48.6)	367 (52.7)	142 (40.6)	0.001**
Religion				
Catholic	931 (88.9)	624 (89.5)	307 (87.7)	0.378
Evangelical	47 (4.5)	32 (4.6)	15 (4.3)	0.822
No religion	45 (4.5)	24 (3.4)	21 (6.0)	0.054
Other	24 (2.3)	17 (2.5)	7 (2.0)	0.654
Education				
Primary	448 (42.8)	304 (43.6)	144 (41.1)	0.446
Secondary	501 (47.9)	336 (48.2)	165 (47.1)	0.745
More than secondary	98 (9.4)	57 (8.2)	41 (11.7)	0.064
Employed				
Employed	30 (2.9)	15 (2.2)	15 (4.3)	0.008**
Domestically employed	114 (10.9)	65 (9.3)	49 (14.0)	0.008**
Unemployed	903 (86.3)	617 (88.5)	286 (81.7)	0.003**
Marital status				
Married	402 (38.4)	224 (32.1)	178 (50.9)	0.000***
Single	366 (35.0)	276 (39.6)	90 (25.7)	0.000***
Separated/divorced	37 (3.5)	11 (1.6)	26 (7.4)	0.000***
Widowed	6 (0.6)	3 (0.4)	3 (0.9)	0.388
In a relationship	236 (22.5)	183 (26.3)	53 (15.1)	0.000***
Parity				
Nulliparous	217 (20.7)	160 (23.0)	57 (16.3)	0.012*
Parous (1–2 births)	557 (53.2)	374 (53.7)	183 (52.3)	0.675
Parous (>2 births)	273 (26.1)	163 (23.4)	110 (31.4)	0.005**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

† χ^2 test for significance between first-time and previous IUD recipients at $\alpha = 0.05$.
IUD, intrauterine device.

inflammatory disease; 72 (6.9%) cases of sexually transmitted infections; 1 (0.1%) pregnancy; and 1 (0.1%) uterine perforation.

Within the 5-year study time frame 188 women removed their IUD. Reasons for discontinuation were involuntary (38%), such as an IUD expulsion, or by choice (34%), such as wanting to become pregnant; few (12%) removed their IUD due to a complication, such as pelvic pain or pregnancy; and 16% did not have a reason for IUD removal noted in their charts. Involuntary reasons for IUD removal occurred more frequently earlier. The percentage of removals due to involuntary reasons were: 71% at 2 weeks; 67% at 1 month; 71% at 3 months; and 61% at 1 year. After the first year, reasons for removal were primarily by

choice. At 3 and 5 years, 39% and 58% of removals were by choice, respectively (Table 2).

Figure 1 shows the Kaplan–Meier survival curves for time to IUD removal due to an involuntary reason, a complication or a choice. IUD discontinuation due to involuntary reasons occurred earlier in the 5-year timeline. Log-rank tests indicated there were differences in survival curves between those who removed their IUD for an involuntary reason, a complication or by choice ($p < 0.001$).

DISCUSSION

This study is among the first to our knowledge to examine patient characteristics associated with IUD

Table 2 Reasons for IUD removal (n=188)

Reasons for IUD removal	Total (%)	2 weeks (%)	1 month (%)	3 months (%)	1 year (%)	3 years (%)	5 years (%)
Involuntary	38	71	67	71	61	24	10
Complication	12	0	17	5	18	17	10
Choice	34	6	0	5	21	39	58
None specified	16	24	17	19	0	20	22
Total (n)	188	17	6	21	38	46	60

See Appendix for lists of the specific reasons 'Involuntary', 'Complication' and 'Choice'. IUD, intrauterine device.

performance in a recent Argentinian patient population; existing studies date before 1990.¹⁶

Primary reasons for IUD discontinuation were involuntary, mainly due to an expulsion or a partial expulsion (81%), and by choice, predominantly to become pregnant (55%). Few (12%) discontinued due to a complication such as pelvic pain or bleeding. Current literature validates reasons for IUD discontinuation due to expulsions and personal choice.^{3 6 18} Our study provides a timeline of IUD removals to elucidate that IUD discontinuations within the first year of insertion were primarily involuntary and removals after 3 years were by choice.

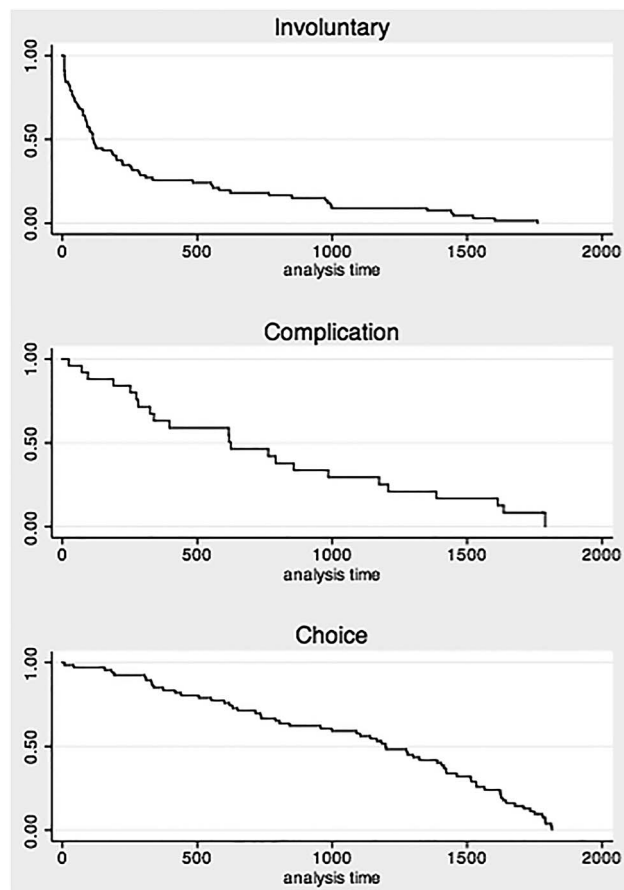


Figure 1 Kaplan–Meier survival curves for reasons for intrauterine device (IUD) removal (n=188): 'Involuntary', 'Complication' and 'Choice'. See Appendix for list of reasons. Note: analysis time in days post-insertion day (0).

A similar retrospective study was conducted at a family planning clinic in Brazil on a smaller sample size (n=118); their continuation rate was 45% compared to 82% in our study. Major differences include sample size and loss to follow-up (21% vs 5% in our study).¹⁹ The low rate of IUD removal 5 years post-insertion, the low incidence of adverse symptoms, and the primarily involuntary reasons for IUD removal indicate that women had an overall positive experience with this method of contraception.

Limitations of this study include the retrospective nature of data collection from patient charts. It is possible that some adverse outcomes were underreported in the patient files or not diagnosed due to limited resources. Lastly, our data came from one family planning clinic in Argentina, therefore generalisability may be limited.

CONCLUSION

Our study demonstrates overall positive experiences with IUD use in a Buenos Aires patient population, with low rates of discontinuation, minimal adverse effects, and high efficacy. Offering the IUD cost-free to similar populations may also result in high continuation rates and provide low-to-middle income women autonomy in their family planning needs while reducing unintended pregnancies.

Implications for practice and public policy

These findings may encourage providers who are considering providing the IUD to similar populations, and restore comfort in women who fear adverse outcomes.

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Competing interests None declared.

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Data sharing statement SRJ, MSP and TMP had full access to the data in a secure shared folder. Unpublished data from our study has not been made available to any other constituents.

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Appendix

I. Information collected from patient charts

Nationality	Argentinian versus other
Education level	Primary, secondary, beyond secondary
Employment	Employed, domestically employed, unemployed
Marital status	In a relationship, married, single, separated or divorced, widowed
Condition of IUD	Expelled Partial expulsion Partner complains of discomfort Removed Replaced String cut String discomfort
Outcomes and symptoms	Anaemia Irregular bleeding Menopause Pelvic inflammatory disease Pelvic pain Pregnancy Sexually transmitted infection Uterine perforation

II. Reasons for IUD removal

Involuntary	IUD expelled IUD partially expelled IUD replacement IUD removed accidentally Non-IUD related procedure
Complication	Anaemia Became pregnant Irregular bleeding Partner feels discomfort with string Pelvic inflammatory disease Pelvic pain Uterine perforated
Choice	No sexual relationship Menopause Wanted pregnancy Wanted other birth control method Wanted oral contraceptives

None specified

IUD, intrauterine device.