

Factors predicting uptake of long-acting reversible methods of contraception among women presenting for abortion

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Overall, Australia's population is one of the healthiest in the world. Nevertheless, the country has relatively high levels of sexual and reproductive ill health.¹ It is estimated that 50% of Australian women have had an unintended pregnancy during their reproductive lives,² with about 80 000 abortions occurring annually.³ For several years, there has been growing national and international recognition that a key way to reduce unintended pregnancies is to encourage women to use more effective and less user-dependent methods, specifically to increase the uptake of long-acting reversible contraceptive (LARC) methods.⁴⁻⁷ LARC methods include progestogen injections, progestogen-only implants, and hormonal and copper intrauterine contraceptive (IUC) methods.⁵ Of the LARC methods, IUC and implants are the most effective, and have the potential to reduce unintended pregnancy by 20-fold compared with women using contraceptive pills, patches or rings.⁸ Despite this, less than 7% of women in Australia use an IUC or implant,⁹ and discussion of LARC methods features in only 15.4% of general practice contraception consultations.¹⁰

Among women seeking abortion, several studies have found that post-abortion uptake of IUC or implants is associated with a significantly reduced likelihood of having a subsequent repeat abortion compared with women using the combined oral contraceptive pill.¹¹⁻¹⁴ Thus, in addition to providing safe pregnancy termination services, it is now widely recommended that abortion clinics should provide high-quality counselling about future methods of contraception and, in particular, providers should communicate the greater effectiveness of LARC methods.^{15,16} Ideally the chosen method of contraception should be initiated immediately after abortion,¹⁵ an important

Abstract

Objective: To examine the uptake of long-acting reversible contraceptive (LARC) methods after abortion among women seeking abortions through a major Australian abortion provider.

Design and setting: Cross-sectional study of women's post-abortion contraceptive choices, conducted at Marie Stopes International clinics across Australia between 1 September and 31 December 2012.

Participants: 7267 of 9477 women (76.7%) presenting during the study period had data collection forms completed. Analysis was based on the 6348 women with completed demographic details.

Main outcome measures: Uptake and immediate provision of LARC contraception after abortion.

Results: Just over a quarter of women (1742; 27.4%) chose a LARC method for use after abortion. Of those choosing a LARC, immediate provision occurred in 71.1%. Compared with women aged 20-24 years, those aged 16-19 years were less likely to have immediate LARC insertion and those over 30 more likely. Women in the lowest socioeconomic quintile were the least likely to leave the service with their chosen LARC in place compared with those in higher quintiles. Immediate LARC provision occurred more often after surgical abortion compared with medical abortion (1034 [74.4%] v 204 [60.0%]; $P < 0.001$).

Conclusion: Among women who opted for a LARC method after abortion, immediate provision was less likely to occur in women aged under 30 years, less likely as their level of disadvantage increased and more likely after surgical abortion compared with medical abortion. Public health policy needs to facilitate access to LARC methods after abortion so that more women are able to avoid a further unintended pregnancy.

issue given that up to 83% of abortion clients ovulate within the first cycle.¹⁷ Immediate provision can occur at the time of a surgical abortion, as IUC methods and implants can be safely inserted or administered at the end of the procedure.¹⁸ After medical abortion IUC methods can be initiated as early as 5-9 days after abortion, once the practitioner is reasonably certain the woman is no longer pregnant.¹⁹ Implants can be inserted earlier than this.⁶

The not-for-profit, non-government organisation Marie Stopes International (MSI) is the largest provider of abortion services in Australia and operates in all states and territories except Tasmania, South Australia and Northern Territory. While the actual number of abortions in Australia is unknown, MSI estimates that in the states and territories where it operates, around a third of all abortions are undertaken in its centres, comprising about one-quarter of all abortions across Australia.

In this study, we aimed to determine the extent to which MSI providers were ensuring women were leaving the abortion service with a plan for contraception, what proportion stated their intent to use either an IUC or implant LARC method and of those how many received immediate provision of their nominated method. We also sought to explore the sociodemographic and reproductive health factors associated with immediate provision of LARC.

Methods

We conducted a large, prospective, multicentre cross-sectional study through MSI Australia (MSIA) clinics, the largest single provider of abortion in Australia. All 16 of the provider's centres across Australia were included. Between 1 September and 31 December in 2012, MSIA staff documented the contraceptive choices of women who had attended for a termination of pregnancy. The data

1 Demographic and reproductive characteristics of 6348 women who had an abortion at a Marie Stopes International Australia clinic, 1 September – 31 December 2012

	No. (%)
Age group (years)	
Under 16	45 (0.7%)
16–19	698 (11.0%)
20–24	1727 (27.2%)
25–29	1510 (23.8%)
30–39	1923 (30.3%)
40 and over	445 (7.0%)
Relationship status	
Single	2742 (43.2%)
Partnered	3606 (56.8%)
Birthplace	
Australia	4083 (64.3%)
Other Pacific nation	423 (6.7%)
Asia	1117 (17.6%)
Africa	161 (2.5%)
America (North and South)	77 (1.2%)
Europe	327 (5.2%)
Middle East	160 (2.5%)
Socio-Economic Index for Areas quintile	
1 (most disadvantaged)	993 (15.6%)
2	883 (13.9%)
3	1486 (23.4%)
4	1236 (19.5%)
5 (least disadvantaged)	1750 (27.6%)
Number of children	
0	3187 (50.2%)
1	1136 (17.9%)
2	1280 (20.2%)
3	490 (7.7%)
4 or more	255 (4.0%)
Number of previous terminations	
0	3933 (62.0%)
1	1690 (26.6%)
2	506 (8.0%)
3	148 (2.3%)
4 or more	71 (1.1%)
Abortion method on this occasion	
Medical	1449 (22.8%)
Surgical	4892 (77.1%)
Both medical and surgical	7 (0.1%)

collection form was completed at the time of the woman's discharge from the service and was anonymous, with no individually identifying information recorded.

Demographic information recorded included age, postcode, relationship status, country of birth, number of children and number of previous terminations. Staff documented the method of abortion used — medical

2 Type of post-abortion contraception chosen*

	No.	% (95% CI)
Male condom	965	15.2% (11.1%–19.3%)
Female condom	16	0.3% (0.1%–0.4%)
Combined oral contraceptive pill	2442	38.5% (35.4%–41.5%)
Vaginal ring	38	0.6% (0.3%–0.9%)
Progesterone-only pill	90	1.4% (0.7%–2.1%)
Injection (eg, Depo-Provera)	238	3.7% (3.1%–4.4%)
Implant (eg, Implanon NXT)	761	12.0% (10.6%–13.4%)
Intrauterine device (eg, copper)	173	2.7% (1.7%–3.8%)
Intrauterine system (eg, Mirena)	810	12.8% (9.3%–16.2%)
Natural methods	16	0.3% (0.1%–0.4%)
Withdrawal method	10	0.2% (0%–0.3%)
None	721	11.4% (5.9%–16.8%)
Vasectomy	40	0.6% (0.4%–0.9%)
Tubal ligation	132	2.1% (1.5%–2.7%)

* Some women reported choosing more than one method. If they reported any of Natural, Withdrawal or None, and also reported a "medical" method they were classified as only reporting the medical method. ◆

abortion, surgical abortion or surgical abortion after a failed medical abortion. The staff recorded the type of post-abortion contraception chosen and whether it was put in place before discharge from the service.

Ethics approval was granted by the University of Sydney Human Research Ethics Committee, and was in keeping with the guidelines set forth by the National Health and Medical Research Council's National Statement on Ethical Conduct in Research Involving Humans.

Statistical analysis

We calculated the frequency and percentage of women in each subcategory of the demographic characteristics — age, postcode (grouped into Socio-Economic Index for Areas [SEIFA] quintiles using the Australian Bureau of Statistics Index of Relative Socio-Economic Advantage and Disadvantage),²⁰ relationship status, country of birth, number of children and number of previous terminations. We examined the association between the choice of a LARC (IUC or implants) after abortion and the demographic characteristics using logistic regression. Also, among women who chose a LARC after abortion, we examined the association between having it inserted at the time of the abortion and the demographic characteristics using logistic regression. In both models, we adjusted for clustering by clinic

and stratification by state. Ninety-five per cent confidence intervals for the proportion of women who selected a particular contraceptive method after abortion were also calculated, adjusting for clinic and state. All analyses were carried out with SAS 9.3 (SAS Institute Inc, 2011).

Results

Between September and December 2012, data were collected from 16 centres across five states and territories. The audit form completion rate in each centre varied from 22.7% to 95.3%. In total, 7267 of the 9477 women (76.7%) who presented during the study period were included in the study. There were 7162 women (98.6%) who had complete data recorded for all the demographic variables (excluding postcode) and choice of contraception after abortion, and of these women, 6348 (88.6%) had a postcode that could be matched to a SEIFA quintile.

The demographic characteristics of these women are presented in Box 1. The largest proportion of women was in the 30–39 year age group, followed by those aged 20–24 years. Two-thirds (4083; 64.3%) were Australian born, with many other smaller countries of origin represented. Half the sample was nulliparous. Almost two-thirds (3933 of 6348; 62.0%) had no history of abortion but 725 (11.4%) had a history

3 Association of demographic and reproductive factors with choice of long-acting reversible contraception (LARC) after abortion

	Women who chose LARC (%)*	Adjusted odds ratio (95% CI)	P
Age group (years)			< 0.001
Under 16	22 (48.9%)	2.98 (1.75–5.10)	
16–19	202 (28.9%)	1.31 (1.12–1.52)	
20–24	456 (26.4%)	1.00 (reference)	
25–29	383 (25.4%)	0.75 (0.63–0.90)	
30–39	523 (27.2%)	0.61 (0.48–0.77)	
40 and over	156 (35.1%)	0.78 (0.56–1.07)	
Relationship status			0.42
Single	723 (26.4%)	0.96 (0.85–1.07)	
Partnered	1019 (28.3%)	1.00 (reference)	
Birthplace			< 0.001
Australia	1184 (29.0%)	1.00 (reference)	
Other Pacific nation	123 (29.1%)	0.95 (0.7–1.28)	
Asia	244 (21.8%)	0.72 (0.65–0.81)	
Africa	50 (31.1%)	1.09 (0.87–1.37)	
America (North and South)	19 (24.7%)	0.93 (0.63–1.35)	
Europe	93 (28.4%)	1.11 (0.83–1.47)	
Middle East	29 (18.1%)	0.57 (0.37–0.90)	
Socio-Economic Index for Areas quintile			0.12
1 (most disadvantaged)	255 (25.7%)	1.00 (reference)	
2	271 (30.7%)	1.24 (1.02–1.52)	
3	436 (29.3%)	1.23 (1.00–1.52)	
4	347 (28.1%)	1.24 (0.94–1.65)	
5 (least disadvantaged)	433 (24.7%)	1.13 (0.88–1.45)	
Number of children			< 0.001
0	665 (20.9%)	1.00 (reference)	
1	336 (29.6%)	1.92 (1.71–2.15)	
2	461 (36.0%)	2.88 (2.24–3.69)	
3	181 (36.9%)	2.93 (2.24–3.83)	
4 or more	99 (38.8%)	3.3 (2.19–4.95)	
Number of previous terminations			0.095
0	995 (25.3%)	1.00 (reference)	
1	521 (30.8%)	1.23 (1.05–1.44)	
2	150 (29.6%)	1.07 (0.85–1.35)	
3	52 (35.1%)	1.34 (0.79–2.27)	
4 or more	24 (33.8%)	1.23 (0.62–2.42)	
Abortion method on this occasion			0.089
Medical	342 (23.6%)	1.00 (reference)	
Surgical	1398 (28.6%)	1.16 (0.98–1.38)	
Both medical and surgical†	2 (28.6%)		

* Row percentages. † Category excluded from logistic regression analysis. ◆

of two or more previous terminations of pregnancy.

Contraceptive choices after abortion

The most popular contraceptive method adopted after abortion was the oral contraceptive pill, chosen by more than a third of women (2442 of 6348; 38.5%) (Box 2). Few women elected to take the progesterone-only

pill (90; 1.4%). Condoms were chosen by 981 (15.5%). Half the women chose one of the user-dependent modern methods (3551; 56.0%). Around one woman in 10 elected not to use any contraception (721; 11.4%). Of the 2532 women who chose either of the pills, 2296 (90.7%) had a prescription provided after abortion (95% CI, 87.5%–93.9%). Injectable progestogen was taken up by 238 women (3.7%) and

just over a quarter of women chose either an implant or IUC LARC method (1742; 27.4%).

LARC choice after abortion

Choice of LARC was influenced by age, with younger women (<20 years) more likely to choose a LARC method compared with older women (Box 3). Women born in Australia were more likely than Asian- and Middle Eastern-born women to opt for a LARC method (adjusted odds ratio [AOR], 0.72; 95% CI, 0.65–0.81, and 0.57; 95% CI, 0.37–0.90, respectively).

LARC method choice was associated with number of children, with the likelihood of LARC choice increasing with number of children. There was no association between type of abortion and choosing a LARC method.

Insertion of LARC after abortion

Of the 1742 women who chose a LARC method, 1238 (71.1%) had immediate provision of their implant or IUC at the time of surgical abortion or, in the case of medical abortion, at the 2-week follow-up visit. Thus, overall, 19.5% left the service with their LARC method in place. Among women who opted for a LARC, the actual provision of LARC immediately after abortion was significantly more common after surgical abortion compared with medical abortion (AOR, 2.26; 95% CI, 1.58–3.24) (Box 4). Immediate insertion occurred more frequently among women aged over 30 compared with younger women, and among women who were Australian or African born. In a test for trend, women were more likely to receive a LARC method as their level of disadvantage lessened ($P < 0.026$). Women who had had one previous termination were significantly more likely to leave the service with the LARC method in place, compared with women who had presented for their first abortion (AOR, 1.37; 95% CI, 1.11–1.70).

Discussion

This study documented Australian women's choice of post-abortion contraception, with a particular focus on the uptake of the most reliable methods of contraception, implants and IUC. We found that, despite a

4 Association of demographic and reproductive factors with long-acting reversible contraception (LARC) insertion immediately after abortion

	Women who had LARC inserted immediately, no. (%) [*]	Adjusted odds ratio (95% CI)	P
Age group (years)			0.007
Under 16	16 (72.7%)	1.35 (0.46–3.96)	
16–19	129 (64.5%)	0.81 (0.51–1.27)	
20–24	309 (68.2%)	1.00 (reference)	
25–29	262 (68.8%)	1.06 (0.74–1.51)	
30–39	394 (75.6%)	1.47 (1.03–2.09)	
40 and over	128 (82.6%)	2.24 (1.22–4.11)	
Relationship status			0.98
Single	508 (70.7%)	1.00 (0.80–1.24)	
Partnered	730 (72.1%)	1.00 (reference)	
Birthplace			<0.001
Australia	830 (70.6%)	1.00 (reference)	
Other Pacific nation	73 (59.4%)	0.6 (0.44–0.81)	
Asia	183 (75.3%)	1.13 (0.83–1.54)	
Africa	42 (84.0%)	2.34 (1.22–4.49)	
America (North and South) [†]	19 (100.0%)		
Europe [‡]	72 (77.4%)	1.7 (0.99–2.93)	
Middle East	19 (67.9%)	0.97 (0.33–2.87)	
Socio-Economic Index for Areas quintile			0.026 [‡]
1 (most disadvantaged)	168 (66.7%)	1.00 (reference)	
2	185 (68.8%)	1.17 (0.87–1.57)	
3	311 (71.5%)	1.26 (0.90–1.77)	
4	252 (72.8%)	1.50 (0.97–2.32)	
5 (least disadvantaged)	322 (74.9%)	1.54 (1.04–2.26)	
Number of children			0.19
0	454 (68.9%)	1.00 (reference)	
1	234 (79.9%)	0.89 (0.68–1.16)	
2	346 (75.2%)	1.01 (0.73–1.39)	
3	135 (75.4%)	1.04 (0.74–1.46)	
4 or more	69 (69.7%)	0.65 (0.34–1.27)	
Number of previous terminations			<0.001
0	686 (69.3%)	1.00 (reference)	
1	395 (76.1%)	1.37 (1.11–1.70)	
2	105 (71.0%)	0.95 (0.72–1.27)	
3	33 (64.7%)	0.72 (0.40–1.28)	
4 or more	19 (79.2%)	1.65 (0.59–4.58)	
Abortion method on this occasion			<0.001
Medical	204 (60.0%)	1.00 (reference)	
Surgical	1034 (74.4%)	2.26 (1.58–3.24)	
Both medical and surgical	0		

*Row percentages. Data on timing of LARC insertion were missing for 10 women, who were therefore excluded from the analysis. †America (North and South) was grouped with Europe for analysis, as all women within the America (North and South) category had a LARC inserted. ‡P for quintiles is test for trend. ◆

history of previous abortion in 38.0% of the sample, under a third of women attending one of the MSIA clinics indicated their intention to use one of these LARC methods after abortion, and in only one in five was the method inserted immediately. Based on population data, this rate of LARC

usage is significantly higher than the overall Australian rate.²¹ Similar findings were documented in a contraceptive study in the United States, in which women with a history of a recent abortion were more than three times as likely to choose an intrauterine device (adjusted relative risk [RR],

3.30; 95% CI, 2.67–4.85) and 50% more likely to choose the implant (adjusted RR, 1.51; 95% CI, 1.12–2.03) compared with women without a recent abortion.²² Importantly, these methods are potentially of greatest benefit to a population at risk of repeated unintended pregnancy. In a Scottish study of 986 women who sought abortion, 121 (12.3%) returned requesting another abortion within the subsequent 2 years. The chance of repeat abortion was reduced by 95% in women previously provided either IUC or the implant compared with women prescribed the oral contraceptive pill.¹⁴

In our study, several demographic factors were associated with greater likelihood of LARC choice, including young age and having one or more child. Proportionally fewer women who were Asian- and Middle Eastern-born chose a LARC method compared with Australian-born women. In contrast, immediate LARC provision was associated with women aged 30 years and older, and least likely to occur in younger age groups. Socioeconomic status, as measured by SEIFA quintiles, was linearly associated with LARC provision before discharge, with those women living in areas of highest disadvantage least likely to have a LARC method inserted.

The difference between stated intention to use a LARC and actual immediate provision may reflect the fact that women are required to pay an additional fee to have a LARC method initiated at the time of surgical and medical abortion. While the cost of the implant and the hormonal IUC are both subsidised by the Pharmaceutical Benefits Scheme, the copper IUC is not. Some women, particularly those who are younger or from areas of high socioeconomic disadvantage, may have faced difficulty finding the extra money required for upfront payment of their chosen LARC method. Although MSI use telephone health interpreter services for women of non-English speaking background, language may have been a barrier to contraceptive information provision for some women.

The type of abortion chosen, while not associated with LARC choice, was associated with LARC provision with greater likelihood of initiation after

surgical abortion compared with medical abortion. Women may have seen a benefit in having the LARC method (especially an IUC) inserted while under sedation, as is commonly practised with surgical abortion.

There are, however, additional challenges to ensuring this transpires after medical abortion, as it requires clinicians to be certain the abortion is complete and to be available soon after expulsion of the pregnancy has occurred. The evidence supports insertion of IUC within 5 to 9 days of medical abortion, and it has been found to be as safe as delayed insertion at 3–4 weeks with no increased rate of expulsions or complications.¹⁹ Delayed insertion of the LARC, although sometimes unavoidable, may mean that the method is never initiated, with one study showing that 40% of clients did not return for the insertion of their IUC.¹⁸

This study represents a large number of women. Nevertheless, we sampled only 76.7% of those presenting. The audit forms were completed by nursing and medical staff. Non-completed forms are more likely to represent systemic flaws at the clinic level rather than the individual level, as some centres only completed forms for a minority of clients. Although we were able to document the factors associated with LARC uptake and non-uptake, we were not able to explore in depth what the key barriers

perceived by women to be to adopting these methods were.

While abortion services recognise the need to ensure women leave their services with reliable contraception, there needs to be greater emphasis on ensuring that LARC methods are made more accessible and more affordable. This will enable more women to avoid a further unintended pregnancy.

Competing interests: Kirsten Black is a consultant on an international advisory board for Bayer HealthCare, and has been supported in this capacity to attend conferences as a presenting author; she has also received payment as a speaker. She is a registered trainer in implant insertion and removal for MSD. Philip Goldstone is a registered trainer in implant insertion and removal for MSD.

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