

Original Research

Intrauterine Contraception Use among Women Receiving Post-Abortion Care in Guangzhou, China: A Cross-Sectional Study

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Abstract

Background: In China, long-acting reversible contraceptive (LARC) methods are recommended mainly for married women who were reluctant to have more children. The inclusion of LARC methods (mainly intrauterine device, IUD) into Post-Abortion Care (PAC) service for all women is a new concept. We aim to explore the uptake of IUD and the possible factors affecting IUD use among women receiving PAC in Guangzhou, China. **Methods:** This cross-sectional study was conducted from June 2019 and July 2020 among 945 women in Guangzhou. The Multivariate logistic regression was employed to examine factors associated with IUD uptake. **Results:** The prevalence of IUD uptake was 17.4% at one month after receiving PAC in Guangzhou, China. Unmarried women were 61% significantly less likely to use IUD than married women. Immigrants were 76% significantly less likely to use IUD than non-immigrants. Women who had no children or only one child were 68% and 60% significantly less likely to use IUD compared to those who had more than two children. Barriers to the use of IUD were lack of familiarity with respect to IUD, concerns related to future fertility and women with limited decision-making autonomy regarding IUD use. **Conclusions:** The study highlighted the needs for policies and education programs to promote the use of IUD to prevent repeat unintended pregnancy during the immediate post-abortion period.

Keywords: long-acting reversible contraceptives; intrauterine device; induced abortion; post-abortion care; prevalence; barriers; China

1. Introduction

Post-abortion contraception plays a critical role in the provision of quality post-abortion care (PAC) services [1]. The adoption of family planning methods after consultation with a healthcare professional among women seeking induced abortion is essential to reduce repeat abortions [2]. In China, despite the adoption of PAC in public hospitals, more than 30% of women have experienced at least one abortion [3]. The reason may in part be due to contraceptive failure, incorrect use of contraception and contraceptive discontinuation. This points to the necessity of providing effective contraceptive counseling to help women choose their preferred methods and reduce discontinuation. However, contraceptive methods are not equally effective. Methods such as condoms, pills and injectable contraceptives often fail due to their dependence on patient compliance. Optimal measures and systematic education programs are urgently needed to reduce the incidence of induced abortion.

Long-acting reversible contraceptives (LARCs) have emerged to be one of the best practices which offer the highest level of reversible protection against pregnancy and for a longer time period [4]. Compared to short-acting methods, they exhibit higher compliance. Despite global evidence demonstrating the advantages of LARC methods [5,6], the low uptake among post-abortion patients is a concern for healthcare providers and policy makers. It has been shown

that a variety of factors can affect LARCs use [7]. How the specific context affects the use of LARCs and what strategies are adopted to promote effective contraceptive counseling continuously attract researcher's interests.

In China, LARC methods (mainly IUD) are recommended mainly for married women who were reluctant to have more children. The inclusion of IUD into PAC for all women is a new concept. Public hospitals in Guangzhou, where this study was conducted, were included in a pilot project to the provision of a wider choice of methods, particularly IUD free of charge. However, little is known about the extent to which IUD is used among women presented at PAC services and its barriers in such settings. Hence, the present study explored the uptake of IUD and the possible factors affecting IUD use in the post-abortion period in Guangzhou, China.

2. Methods

2.1 Study Setting

Guangzhou, located at the Pearl River delta, is one of the most affluent regions in China. Guangzhou is home to more than 16 million people, 50% of whom are internal migrants [8]. This study was conducted in the Third Affiliated Hospital of Southern Medical University, a public hospital providing PAC free of charge.



2.2 Study Design

This cross-sectional study was conducted from the period of June 2019 to July 2020 at the PAC unit of our hospital using anonymous questionnaire. PAC is implemented according to the Post-abortion Care Consortium in May 2002 [9]. We recruited women seeking induced abortion who presented at PAC unit before leaving the clinic, (1) Chinese nationality; (2) providing informed consent. Women who had cognitive impairment and who wish to be pregnant in the near future were excluded. We also excluded women who rejected the use of IUD.

2.3 Sample Size Determination

The sample size was determined by using the single population proportion based on 50% level of significance with a 5% margin error [10].

Based on this, and a 15% non-responsive rate was taken into account, the total sample of this study was estimated to be 945.

2.4 Procedures and Measures

PAC is implemented according to the Post-abortion Care Consortium in May 2002 [9]. It is performed by trained counselors covering five sections of information: (1) perils and possible complications of induced abortion, (2) the reason of the induced abortion, (3) information about contraceptive materials (including condoms, oral contraceptives, intrauterine devices, implants) covering their indication, route of administration, advantages and disadvantages, side effects and their solutions with tailored focus on the participant's preferred methods, (4) emphasize the use of contraceptive methods correctly and continually, (5) male involvement (involving male partner in individual counseling. For those who are absent, brochures regarding information about contraceptives are handed out to women). Data were collected at one month after receiving PAC but before resuming intercourse. The main outcome was the uptake of IUD at one month post-abortion. An anonymous structured questionnaire was distributed to each women covering: (1) demographic features, such as age, marital status, education, occupation, monthly income and migration status; (2) reproductive characteristics such as parity, number of living children, previous induced abortion and uptake of contraception; (3) perceptions about IUD and other related variables such as familiarity with IUD, concerns about side-effects, husband's/partner's attitude on IUD and the person responsible for making decisions.

2.5 Statistical Analyses

Data was analyzed by SPSS software (SPSS, version 20.0, Chicago, Illinois, USA) Chi-square test was used to assess the differences between women who used IUD and those who did not. Then, the multivariate logistic regression, using step-wise method, was employed to identify factors that were significantly associated with the uptake of

IUD. All tests were 2-sided and $p < 0.05$ was considered statistically significant.

3. Results

3.1 Demographic Characteristics of Study Participants

Of the 945 eligible women who were recruited in this study, 164 used IUD, thus resulting a magnitude of 17.4%.

Demographic information of abortion patients was presented in Table 1. Slightly more than half (53.0%) of the patients aged between 19 and 29 years and a similar proportion (46.4%) were between the ages of 30 and 44. 48.8% of the participants had a college education. More than half of the patients (64.0%) were employed and 51.0% were married. More than a third of the participants (38.7%) had monthly incomes of 4000–8000 CNY, 65.6% were internal migrants (Table 1).

3.2 Variations in the Use of IUD

Concerning the demographic characteristics of participants, marital status and household registration place were significantly associated with IUD use. Married women were significantly more likely to use IUD as compared to unmarried women. Similarly, women who had local household registration were significantly more likely to use IUD than migrants (Table 2). With respect to reproductive history, women who had two living children or more were significantly more likely to use IUD compared to those who had one child alive or those who had no children (Table 3). Women who were extremely familiar with IUD (39.6%) were significantly more likely to use IUD compared to those who were moderately familiar or not familiar with IUD. In relation to concerns about side-effects of IUD, the proportion that used IUD was significantly lower among women who perceived a higher likelihood of future infertility than among those who perceived their likelihood of future infertility was moderate or low. The use of a IUD was also significantly increased among women who made decisions on the use themselves compared to their husbands/partners as the main deciders (Table 3).

3.3 Multivariate Analysis of Factors Associated with the Use of IUD

Table 4 shows factors influencing IUD use in multivariate logistic regression analysis. Unmarried women were 61% significantly less likely to use a LARC when compared with married women (odds ratio (OR) = 0.392, 95% confidence interval (CI): 0.116–0.673). In relation to migration status, immigrant women were 76% less likely to use IUD compared to native women (OR = 0.236, 95% CI: 0.090–0.445). Similarly, women who had no children or only one child were about 68% and 60% respectively significantly less likely to use IUD compared to women who had two living children or more (OR = 0.318, 95% CI: 0.163–0.584). Women who reported low familiarity with IUD were 53% significantly less likely to use IUD (OR

Table 1. Variations in the use of LARCs by demographic features.

Characteristics	Total	Use of IUD		χ^2	<i>p</i>
		Frequency	Percentage (%)		
Age				3.961	0.138
15~18	6	0	0		
19~29	501	78	15.6		
30~44	438	86	19.6		
Marital status				17.507	0.000
Single	463	56	12.1		
Married	482	108	22.4		
Level of education				0.161	0.923
Senior high school or less	217	36	16.5		
College	461	80	17.4		
University or more	267	48	19.4		
Occupation				0.032	0.857
Employed	605	106	17.5		
Unemployed	340	58	17.1		
Average monthly income				0.008	0.996
<4000 CNY	264	46	17.4		
4000~8000 CNY	366	63	17.2		
>8000 CNY	315	55	17.5		
Migration status				52.862	0.000
Non-migrant	322	96	29.8		
Migrant	623	68	10.9		

Note: CNY, Chinese Yuan.

Table 2. Variations in the use of IUD by reproductive features.

Reproductive features	Total	Use of IUD		χ^2	<i>p</i>
		Frequency	Percentage (%)		
Parity				0.159	0.923
0	321	57	17.7		
1	318	53	16.6		
≥ 2	306	54	17.6		
Previous induced abortion				0.014	0.932
Yes	480	84	17.5		
No	465	80	17.2		
Number of living children				31.421	0.000
0	318	34	10.7		
1	315	46	14.6		
≥ 2	312	84	16.9		
Any uptake of contraception				0.008	0.914
Yes	763	132	17.3		
No	182	32	17.2		

= 0.472, 95% CI: 0.129~0.738). In addition, women who perceived a higher likelihood of future infertility with the use of IUD were 80% significantly less likely to use IUD compared to women whose concerns were low (OR = 0.205, 95% CI: 0.008~0.432). The odds of IUD use among women whose husbands/partners were the main decision-makers were 54% significantly lower than those who made such decisions themselves (OR = 0.461, 95% CI: 0.271~0.609).

4. Discussion

This study provides a cross-sectional snapshot of the proportion of women who used IUD and possible barriers to its uptake after receiving PAC in a public hospital piloting the provision of a IUD free of charge. Almost all existing studies in China were conducted to measure the continuation of LARCs within 3 months or longer [10,11].

Table 3. Variations in the use of IUD by perceptions and other related factors.

	Total	Use of LARCs		χ^2	<i>p</i>
		Frequency	Percentage (%)		
Familiarity with IUD				116.3	0.000
Low	328	12	3.7		
Moderate	405	68	16.8		
High	212	84	39.6		
Worry about future fertility				301.2	0.000
Low	189	112	59.3		
Moderate	364	43	11.8		
High	392	9	2.3		
Education about IUD at PAC services					
Poor	381	65	17.0	0.062	0.969
Moderate	378	67	17.7		
Satisfying	186	32	17.2		
Fear of pain, irregular bleeding or other side effects				0.009	0.996
Low	290	50	17.2		
Moderate	314	55	17.5		
High	341	59	17.0		
Fearful of the insertion or removal of IUD				0.005	0.998
Low	286	50	17.4		
Moderate	324	56	17.2		
High	335	58	17.3		
Husbands'/partners' attitude on the use of IUD				0.004	0.998
Approved	381	66	17.3		
Disapproved	174	30	17.2		
Uncertain	390	68	17.4		
Person responsible for making decision on the use of IUD				14.303	0.001
Husband/partner	296	31	10.5		
Women herself	345	72	20.9		
Both	304	61	20.1		

PAC, Post-abortion care.

The present study revealed that less than one-fifths of women used IUD after receiving PAC. Uptake of IUD was comparable to a previous research, which showed the intended use of IUDs increased to 19.7% after consultation with health professionals in China [11]. But our estimation was higher than the figures reported in other developing countries. For example, in Brazil, the prevalence of IUD use varied from 0.7% to 1.5% after six months against the backdrop of restrictive abortion laws [12]. In Nepal, only 5% had an IUD or implant placed in the first 3 months post-abortion [13]. While the awareness of IUD was high among women at the study site only 17.4% used IUD a proportion much lower than in New Zealand, where uptake of IUDs increased to 47.6% in 2012 [14]. The comparatively lower use of IUD in this study might support ongoing efforts to facilitate patient knowledge and access to LARCs. A higher proportion of women who chose IUD after contraceptive counseling compared to women in low-resource countries may reflect the provision of quality PAC with a focus on highly effective contraceptives along with the availability of IUD at the study facility. Data on the use of LARCs after

induced abortion were not available at the national level, but factors contributing to the comparatively increased uptake at the study site may involve offering IUD at low/no costs, counseling focused on the benefits of LARCs, and updated information about the suitability of IUDs for young and nulliparous women. Because IUD is government-funded at this hospital, we hypothesize the use of IUD is likely to decline once payment is required. This change has been indicated earlier that the uptake of IUDs increased significantly in New Zealand, largely due to the offering of LARC methods at no cost [14]. Future research into how factors at policy level (device and insertion costs and insurance coverage) affect the uptake of LARCs is needed.

Our study showed that unmarried women were significantly less likely to use IUD compared to married women, which was consistent with other studies [10,13]. Research has shown that unmarried women tended to choose short-acting contraceptives after abortion [15]. In China, IUD is usually recommended to married women, which indicates that LARCs might not be included in the provision of PAC among young unmarried women who are sexually active.

Table 4. Multivariate analysis of factors associated with the use of IUD in Guangzhou, China.

Covariates	OR	SE	95% CI	<i>p</i>
Marital status				
Single	0.392	0.018	0.116~0.673	0.000
Married	—	—	—	—
Migration status				
Non-immigrant	—	—	—	—
Immigrant	0.236	0.179	0.090~0.445	0.000
Number of children alive				
0	0.318	0.135	0.163~0.584	0.000
1	0.409	0.782	0.176~0.625	0.008
≥2	—	—	—	—
Familiarity with IUD				
Low	0.472	0.618	0.129~0.738	0.000
Moderate	0.629	0.005	0.216~1.003	0.084
High	—	—	—	—
Worry about future fertility				
Low	—	—	—	—
Moderate	0.391	0.226	0.105~0.544	0.072
High	0.205	0.149	0.008~0.432	0.000
Person responsible for making decision on the use of IUD				
Husband/partner	0.461	0.089	0.271~0.609	0.000
Women herself	—	—	—	—
Both	0.527	0.013	0.241~0.884	0.093

Note: OR, odds ratio; CI, confidence interval; SE, standard error.

Other potential reasons may include ambivalence about a subsequent pregnancy, concerns about fertility or other potential risks, less knowledgeable about LARCs in general or the desire to avoid visits of the clinic. Studies have shown that increasing awareness among patients about LARCs facilitates LARCs uptake [10,16]. Therefore, provision of client-centered post-abortion contraceptive counseling that focuses on increased knowledge as well as accessibility of LARCs at health facilities important to increase IUD use and reduce repeat induced abortions among this subgroup.

Immigrant women in our study preferred short-acting contraceptives and rarely chose IUD. A study in Guangzhou found that migrant women were more likely to use condoms [15]. Because follow-up visits are recommended after IUD insertion, it's possible that most immigrant women could not return at designated time which explained their reluctance to use IUD. Additionally, immigrants usually suffer from economic disadvantages and inequalities in access to health services [17]. In China, medical bills of immigrants in the host city go beyond the existing basic healthcare insurance coverage. High upfront costs or visit fees associated with IUD might be cited as barriers to the uptake. Even though IUD became subsidized and is available free of charge at the time of data collection, we found lower IUD use among immigrants compared with their native counterparts. This might be because some contraceptive pills are over-the-counter drugs, available at any drugstore at low

price. The finding suggests PAC services should improve coverage for immigrants.

Our study echoed other studies that women with no children or only one child were found to be less likely to use a LARC [10,12]. The lower use of a LARC method among these women could be explained by their fertility desire to have more children. This might be ascribed to fear of infertility related to LARCs. It indicates the importance of providing up-to-date and accurate information on LARCs.

Another barrier to the use of IUD was a lack of familiarity with this method. A similar study in south China found that unawareness about LARCs was one of the main reasons women did not use [10]. Another study at a university in the United States demonstrated that lack of knowledge (both perceived and actual) was one of the most common barriers precluding these college women's LARCs use [18]. Research from other contexts suggested that knowledge on LARCs is influenced by women's perspectives on the diverse factors [19]. Hence, it's necessary to clear many myths regarding LARCs.

Concerns about future fertility were associated with whether participants used IUD post-abortion. Consistent with other studies [10,12], worries about the risks and side effects were one of the main reasons for not using LARCs or discontinuation. Despite evidence supporting the outweighed benefits towards LARCs uptake when cost-related barriers are removed [4], if women in the real world have misconceptions about LARCs, or if providers are biased, then improved utilization of this method cannot be realized at the population level. This barrier could have been alleviated by providing training to health professionals.

Furthermore, our survey suggested that women whose husbands or partners were the main deciders on IUD use were less likely to use IUD as compared to the women who made such decisions themselves. It has been argued that LARCs may be an appropriate option in contexts where male-gendered power controls decision-making process because these methods can be used without partner awareness and do not require resupply [4]. Women who are dependent on their husbands/partners are reluctant to harm their marital relationship, in this case by giving up autonomy, to avoid loss of social support. However, their male partners are ill-equipped with knowledge of reproductive health. This indicates the importance of empowering women to choose the methods from a variety of contraceptives as well as targeting male partners in the provision of PAC.

Our study has some limitations. First, this study was conducted only in a public hospital where IUD is offered at no costs, the findings may not represent abortion patients in China. Second, we did not collect information on policy, service and partner related factors which could further explain the lower use of IUD post-abortion. Third, a self-reporting questionnaire may provide response bias.

5. Conclusions

Uptake of IUD remained comparatively low in a public hospital where the provision at no costs was being piloted. In addition, being unmarried, immigrants, having no children, lack of familiarity with IUD, concerns about future fertility, and women with limited decision-making autonomy were factors associated with the lower use of IUD.

The study highlighted the needs for policies and education programs to promote the use of IUD to prevent repeat unintended pregnancy during the immediate post-abortion period.

Author Contributions

XF drafted the manuscript. SS, JL and JZ implemented the field study. RX took part in the collection of data, implemented the field study and analyzed data. YL initiated the study, participated in data analysis and contributed to the revisions of the manuscript. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Research Ethics Board of Southern Medical University, China on 12th, January 2018 (No.100382). All participants provided written informed consent before being interviewed.

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Conflict of Interest

The authors declare no conflict of interest.

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