Availability of Post-Abortion Family Planning Services and Contraception in Hunan Province, China—A Cross-Sectional Study

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Abstract

Background

Although the project of post-abortion family planning services (PAFPS) has been launched in China for many years, it remains to know how many people received it after induced abortions (IAs), and the prevalence of repeated IAs is still high, it may be related to the quality of PAFPS. Therefore, this study aimed to understand the prevalence of PAFPS and explore the factors related to contraceptive method choice after receiving PAFPS in Hunan Province, China.

Methods

This study was a secondary data analysis from the Women Health Needs Survey (WHNS). Women aged 20–49 with induced abortion history and those who had received PAFPS were selected. Chi-square test and multiple logistic regression analyses were used to identify the related factors about the use of contraceptive methods after receiving PAFPS.

Results

The prevalence of PAFPS was 84.7% in Hunan, China. Women were more likely to use unreliable contraceptive methods if they experienced painless IA (ORs = 3.353, 95% CIs: 1.151–9.769). Farmers or workers (OR = 0.297, 95% CIs: 0.130–0.678), those were followed up after IA (ORs = 0.506, 95% CIs: 0.303–0.846) and those acquired reliable recommendations (ORs = 0.109, 95% CIs: 0.044–0.274) were significantly less likely to use unreliable contraceptive methods.

Conclusion

This study is the first to determine the availability of PAFPS from receivers' perspectives and based on a community population to assess the relationship between PAFPS and contraception in China. PAFPS providers' advice and follow-up play a vital role in women's choice of contraceptive methods. However, the prevalence of follow-up was a little low, and it needed to develop more professional staff in PAFPS. In addition, more research is necessary on how to improve the quality of contraceptive counseling.

Trial registration:

Not applicable

Background

Approximately 55.7 million induced abortions (IAs) occur in the world every year [1], and 20.3% – 60.8% of them are repeated, that is, reporting at least one previous IA [2, 3]. Approximately 8% – 9% of maternal deaths per year are related to abortion complications [4]. In the long term, IAs increase the risk of placenta previa, ectopic pregnancy, premature rupture of membranes, and premature birth in a subsequent pregnancy. IA has also been identified as a risk factor for breast cancer and psychiatric disorders [4–6]. Therefore, IA has become a worldwide health problem, and half of all IA cases are related to unwanted pregnancy [7]. Many countries promised to protect women's reproductive rights at the 1994 International Conference on Population and Development [8]. Post-abortion care (PAC) is a standardized medical service system to achieve that goal. The term PAC was first articulated in Ipas's 1991 strategic planning document, aimed at breaking the cycle of repeated unwanted pregnancy and improving the health status of women in the developing world [9]. In 2002, the Post-abortion Consortium expanded the intention of PAC into five core parts: community and service provider partnerships; counseling; treatment; family planning and contraceptive services; reproductive and other health services [9]. Obviously, PAC has been proven to be significant in increasing contraceptive use, reducing repeated IA and maternal mortality, and decreasing social costs around the world [10–12].

Drawing on the successful experience of other countries, the China Women Development Foundation cooperated with related units to promote the "PAC" project in 2011, and the family planning branch of the Chinese Medical Association released relevant guidelines to provide an outline for hospitals and other medical institutions [13]. Unlike countries where IA is illegal, China possesses a formal and strict service system to manage IA. Therefore, the PAC project focuses on family planning and contraceptive services, namely, post-abortion family planning services (PAFPS), rather than complication management [14]. In addition, the addition of Integrating Post-Abortion family planning services into existing abortion services in hospital settings in China (INPAC), funded by the European Union, established a set of standard PAFPS items [15].

According to the guidelines of PAFPS, service providers should teach women to use contraceptive methods correctly and persistently, encourage them to seek contraception immediately after IA, help them to analyze the causes of contraceptive failure, and inform them of the methods' side effects, abortion's harm, and complications. Simultaneously, follow-up is essential [13]. However, the correct use of contraceptive methods is important because half of all abortions in the world are due to contraceptive failure [7]. The United Nations advocates the use of modern contraceptive methods, which include female and male sterilization, the intrauterine device (IUD), implants, injectables, oral contraceptive pills, male and female condoms, vaginal barrier methods, the lactational amenorrhea method (LAM), and emergency contraception [16]. However, LAM is only applicable to the specific period after delivery [17]. Emergency contraception is usually IUD and oral emergency contraceptive. The principle of an oral emergency contraceptive is to control ovulation, which does not affect already ovulated women. Women with a body weight over 75 kg or body mass index over 25 kg/M² may have a higher risk of accidental pregnancy [18]. The contraceptive effect of the female condom, vaginal diaphragm, and spermicide are inferior [17]. In addition, there are some commonly used traditional contraceptive methods: safe period contraception and in vitro ejaculation. They may have a high contraceptive effect when ideally used [18], but they

cannot be ideally used in practice. Therefore, the contraceptive methods recommended by Chinese experts are sterilization, IUD, implants or injectables, oral contraceptive pills, and condoms [19].

Certainly, PAFPS was of great significance to reduce unwanted pregnancy and improve the knowledge and utilization of contraceptive methods among Chinese women [20, 21], and a two cross-sectional study found that the repeated IAs proportion is now lower than ten years ago [22]. Nevertheless, the prevalence of repeated IAs is as high as 50% [22]. This may be related to the accessibility and quality of PAFPS affecting the choice of contraceptive methods. However, because of the late introduction and its slow development, the PAC project has not yet been launched nationwide, and only 486 hospitals have counseling rooms for PAFPS [15, 23]. Similarly, little research has investigated PAFPS provision in China and it is not sure how many people received PAFPS. Only one study found that 57% of health care providers imparted relevant counseling [24]. According to other studies, the reasons for choosing contraceptive methods are complex, and they are associated with family planning policies, individual characteristics, contraceptive methods' accessibility, affordability, and acceptability [25, 26].

Therefore, this study aimed to 1) understand the prevalence of PAFPS and 2) explore the factors related to contraceptive method choice after receiving PAFPS in Hunan Province, China.

Methods

2.1. Study design and participants

The current study was a secondary analysis of data from the Women Health Needs Survey. The original study was a cross-sectional study conducted by the Women's Federation, Office of the Committee for Women and Children's Workers, and Health Administration in Hunan Province, where located in middle China. It collected data from five representative and distinct areas in Hunan Province between April 1 and August 20, 2018, to understand the women's most common health problems and health care needs at different ages from 10 to 70 years old.

The details of data collection have been reported elsewhere [27-29]. Data collection used four types of questionnaires in four age groups (10-19 years, 20-39 years, 40-49 years, and 50-70 years), which had undergone extensive literature research and were evaluated by an expert panel comprised of 10 experts from Central South University, an affiliated hospital, and the Hunan Province Women's Federation. The inclusion criteria included women aged 10-70 years who lived in Hunan Province and could understand and speak Chinese, and excluded women with mental illnesses or those who could not communicate with others. In addition, all investigators were well trained. In this study, we selected women of childbearing age from 20 to 49 years old.

2.2 Measurement and variables

2.2.1 Definition

In the current study, the women who answered "yes" to the question "Were you recommended contraception after induced abortion by service providers?" were defined as received FPAPS. The PAFPS prevalence was the percentage of women who received PAFPS among women with an IAs history.

Women were asked whether contraception at present and the use of contraceptive methods allowed them to choose more than one method. Contraceptive methods were outcome variables, which we classified as reliable and unreliable. According to the guidelines and experts' consensus [13, 19], reliable contraceptive methods consisted of male and female sterilization, IUD, implantation, oral contraceptive pills, and condoms. Un-reliance included emergency contraception, contraceptive ointment/film, withdrawal, periodic abstinence, and external spermicide. As long as any reliable method was used, she was classified as using reliable contraception. Otherwise, it was unreliable contraception.

2.2.2 Social demographic characteristics

Social demographic characteristics consisted of age, occupation, educational level, marital status, personal monthly income, family monthly income, and the number of children. Marital status was classified as married (including married, remarried, and cohabitation) and single (including single, separated, divorced, or widowed). We ranked educational levels as low, middle, and high. Low means had received 0-9 years of education, middle means 10-12 years of education, and high means more than 12 years of education. When asked about family income and personal income, our unit is RMB (¥, 1¥≈ 0.1546\$, 7/16/2021).

2.2.3 The experience of IAs and PAFPS

The IA experience included IAs history, methods, and satisfaction with the last IA. Painless surgical abortion methods meant surgical abortion with general anesthesia, and non-painless methods meant no anesthesia.

The PAFPS experience included five questions. The question "What contraceptive methods did the service providers tell you about?" was multiple-choice, which were classified as reliable and unreliable methods. The question "Do you know the harms of abortion?" was comprised of 8 items. It was also multiple choice. "No harm," "Do not know," "Not clear," was scored as zero, and "Dysmenorrhea," "Infertility," "Genital tract infection," "Uterine leiomyoma," "Others," was scored as one. Finally, we calculated the final scores. Other questions were "Have you been followed up after the last induced abortion? ", "How did the service providers introduce contraceptive methods to you? ", "Were you informed about the side effects of the contraceptive methods? ".

2.2.4 The desired way to get relevant knowledge

Participants were asked where they wanted to obtain relevant knowledge about contraception, and whether they could choose one or more options.

2.4 Statistical analysis

Data entry was carried out in Epi-Data version 3.0, and the Statistical Package for Social Sciences (SPSS) v26.0 (IBM, Chicago, IL) was used for the statistical analysis. Categorical variables were analyzed by descriptive statistics, including frequencies and percentages. The chi-square test compared the differences between reliable and unreliable contraceptive methods, the reported P values were two-sided, and a value of $P < 0.05$ defined statistical significance. We adjusted the significant variables and all variables with binary logistic regression analysis to identify the relevant factors related to contraceptive method use after receiving PAFPS through odds ratios (ORs) and 95% confidence intervals (CIs).

Results

Excluding women without a history of IA ($n=3808$) and questionnaires missing key information ($n=57$), we included 1231 women with an IA history among the 4606 women and excluded women who did not respond to receiving PAFPS ($n=188$). To further understand contraceptive choice-related factors for women without pregnancy plans after receiving IAs, we excluded those who did not use contraception (by default, they had a current pregnancy plan) ($n=275$). Finally, 768 data were included. The details are shown in Figure 1.

3.1 The prevalence of PAFPS and the characteristics of the participants

According to our definition, the prevalence of PAFPS was the number of women who had received PAFPS divided by the number of women with an IA history, that is, $1043/1237$, equaling 84.7% (Figure 1).

The mean age of the 768 women was 39.17 years, and 59.5% were 40-49 years. Table 1 showed that almost all of the participants were married (94.1%), and the most commonly reported residence, educational level, occupation, personal monthly income, and family monthly income were urban, low, farmer or worker, $<3000\text{¥}$ and $\geq 5000\text{¥}$ (accounting for 59.8%, 43.2%, 37.1%, 47.9% and 53.6% of all participants, respectively). A total of 45.8% of the women had less than two children.

3.2 The experience of IAs and PAFPs

Nearly half of all participants had repeated IAs (46.5%), similar to the rate in the national study [22]. The most common IAs method was painless surgical abortion (52.3%), and 459 (53.4%) women were satisfied with their previous IAs experience. The number of people who had been followed up after IAs was 437 (56.9%). Almost all of them were recommended to use reliable contraceptive methods, 445 (57.9%) were recommended to use specific methods, and 646 (84.1%) were informed of the methods' side effects (Table 1). Table 1 also showed the scores of knowledges of IAs among the participants; 249 (32.4%) of them received zero scores, only 86 (7.0%) received four grades, and no one received five grades. The specific contraceptive methods currently used by participants and recommended by service providers were shown in the appendix table.

3.3 Related factors of using unreliable contraceptive methods

In the 768 women with current contraception who received PAFPS, the univariate analysis indicated that level of education ($P=0.05$), occupation ($P=0.05$), the method of the last induced abortion ($P=0.05$), follow-up ($P=0.05$), and practical advice ($P=0.001$) were significantly correlated with reliable and unreliable contraception (Table 1).

As shown in Table 2, binary logistic regression analysis was used to explore the factors associated with contraceptive methods. After adjusting the significant variables in model a, including the level of education, occupation, the methods of the last IA, follow-up, and practical advice, we found that women who chose painless surgical abortion in the last induced abortion were more likely to use unreliable contraceptive methods than women who used medical abortion (ORs = 3.353, 95% CIs: 1.151-9.769). Farmers or workers were 70.3% significantly less likely than unemployed individuals to use unreliable contraceptive methods (ORs = 0.297, 95% CIs: 0.130-0.678). Women who were followed up after IAs were 49.4% significantly less likely to use unreliable contraceptive methods than those who were not (ORs = 0.506, 95% CIs: 0.303-0.846). Women were 89.1% significantly less likely to use unreliable contraceptive methods if they received reliable methods (ORs = 0.109, 95% CIs: 0.044-0.274).

In model b, we brought all potential variables into the binary logistic regression equation. Similar to model a, farmers or workers (ORs = 0.297, 95% CIs: 0.129-0.683), follow-up (ORs = 0.538, 95% CIs: 0.323-0.914) and reliable advice (ORs = 0.083, 95% CIs: 0.039-0.250) methods were recognized to reduce the use of unreliable contraceptive methods, while painless surgical abortion (ORs = 3.465, 95% 1.177-10.201) was a risk factor for using unreliable methods. In addition, monthly family income was also associated with contraception, and the higher the family income was, the lower the possibility of unreliable contraception.

3.4 The desired way to get relevant knowledge

Professional medical staff (24.0%) had favorable access to knowledge about IA and contraception. Radio and TV (14.9%), the Internet (15.2%), WeChat, and microblogs (14.9%) were also popular methods (Table 3).

Discussion

Our study found that 85% IAs people received PAFPS, but a survey showed that only 57% of the service providers across China provide PAFPS, which was far below ours [24]. This might be associated with the differences in economic development and the allocation of medical service resources. However, it was far lower than 96% in the United States [30], meaning there was room for improvement.

The last method of IA was found to be related to the use of contraceptive methods. Compared with medical abortions, painless surgical abortions, implying IA with general anesthesia, were more likely to lead to unreliable contraception. The possible reason was that compared with drug abortion, painless surgical abortion is more convenient and faster. Thus, sensory trauma to women was more negligible, so they may forget soon after the surgery. Furthermore, another study indicated that perceiving the abortion procedure as not painful was positively associated with repeated abortion [2]. In contrast, one study

proved that long-term safe and reversible post-abortion contraception uptake was slightly lower among women treated with medical abortion than surgical abortion [31], considering the convenience of inserting an IUD immediately after the operation. Although, this was not consistent with our study because we divided surgical abortion into painless and non-painless methods, it proved the importance of communicating with women before an abortion, and service providers could advise women to use long-term reversible contraception immediately after the operation.

Additionally, follow-up could avoid unreliable contraception. Our study found that if women were followed up after abortion, the probability of unreliable contraception would be reduced by at least half. This was because follow-up could strengthen women's awareness of contraception. Moreover, the follow-up would understand the latest status of women and then gave practical, individualized suggestions. However, the follow-up rate was only 49.5%. On the one hand, this might be because the service provider cannot provide active follow-up due to a heavy workload [24]. On the other hand, it might be that the women themselves refused to be followed up because they did not pay attention to it. Therefore, policymakers and service providers should improve the follow-up rate, such as using mobile technology, which was popular among people.

In addition, service providers' recommendations play a vital role. People most wanted to obtain information about contraception after abortion from medical staff in our study, and other research had also demonstrated that physicians' knowledge affects participants' perceptions [32, 33]. Although in our study, the most recommended and used contraceptive methods were condoms and IUD, traditional periodic abstinence with a high contraceptive failure rate was commonly recommended. In contrast, only 0.2% recommended reliable contraceptive methods of implants. This meant that the knowledge of contraceptive methods of service providers needed to be strengthened, consistent with previous research [24, 34, 35]. Although condoms and long-acting oral contraceptives were considered reliable contraceptive methods, their effectiveness relies on correct usage. Otherwise, it would lead to a higher contraceptive failure rate [36]. Therefore, service providers must also inform women about the proper use of contraceptives when providing consultations.

Consistent with previous studies in China [37], we found a relationship between occupation and the use of contraceptive methods. In addition, the family monthly income might also be a related factor. The lower the family income, the more likely unreliable methods were used, as in many countries in the world [38]. As research in Zambia found, more prosperous individuals were more able to buy contraceptives [39]. Although there are free contraceptives in China, due to a lack of publicity when distributing contraceptives, women participating in PAFPS have little understanding of obtaining contraceptives, so the utilization rate and satisfaction are not high.

Although our study did not find a relationship between side effects and contraceptive methods, other studies in China found that women refused to use reliable contraception because they did not feel familiar with those contraceptive methods and were worried about side effects [33, 40]. A complete PAFPS consists of informing people of various contraceptive methods and their side effects so that they

could choose their contraceptive methods based on informed consent [13]. A limited choice of contraceptive methods and inadequate contraceptive counseling both lead to unreliable contraception [41]. What's more, reproductive knowledge as a related factor has been proven in other studies [33]. Our data showed the rarely popularized knowledge of IAs and healthcare should try to popularize it.

Most people received PAFPS, but the quality needs to be improved, and future studies can also explore how to improve contraceptive counseling in China, similar to a case study of quality improvement efforts in Sweden [42].

Our study was the first to determine the availability of PAFPS from receivers' perspectives assess the relationship between PAFPS and contraception in China. Moreover, the study was stratified with random sampling. Therefore, the results of our study represented the present situation of Hunan Province and provided models for middle China. However, some limitations should be presented. Childbearing age refers to 15 ~ 49 years, but this study ignored ages 15 to 19 because of the limitation of the questionnaire. A certain extent of information bias due to the cross-sectional questionnaire survey and the sensitive topic of abortion and contraception might lead to some unmarried women refusing to answer. In addition, since there was no question to ask women about current pregnancy plans, those who did not have a current pregnancy plan but without contraception were excluded. Finally, we cannot determine causality because of the nature of cross-sectional studies.

Conclusions

In summary, the PAFPS prevalence was not low, but the quality should be improved. The contraceptive advice given to women by service providers was important in the use of contraceptive methods. The most commonly used method for women was the method recommended by service providers, and the most wanted to obtain relevant knowledge from service providers. Therefore, it was urgent to cultivate more professionals who could carry out PAFPS. In addition, more research is necessary on how to improve the quality of contraceptive counseling.

List Of Abbreviations

PAFPS

post-abortion family planning

IAs

Induced abortions

PAC

Post-abortion care

IUD

intrauterine device

LAM

lactational amenorrhea method

ORs
odds ratios
CIS
confidence intervals

Declarations

Ethics approval and consent to participate

This cross-sectional study's ethical approval was obtained from the Institutional Review Board of the local governments where the investigators were affiliated. For participants under the age of 16, written informed consent was obtained from their parents / guardians at the same time as the participants provided written consent. All methods were performed in accordance with the relevant guidelines and regulations of the Declaration of Helsinki. All data were treated confidentially and used for research purposes only.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to confidentiality principle and protect participants' privacy, but are available from the corresponding author on reasonable request.

Competing Interest

The authors have no conflicts of interest.

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Authors' contributions

CT, YM, JY, MN, LF, TL and YL contributed to design the study. CT, YM, JY, MN, LF, and TL collected the data. CT analyzed the data, and wrote the first draft of the manuscript and all other authors edited the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1
Univariate analysis of the participants' contraceptive methods (n = 768)

Variables	Contraceptive methods			χ^2	P-value
	Total	Reliable	Unreliable		
	(n = 768)	(n = 692)	(n = 76)		
Sociodemographic Characteristics					
Age (years)				0.719	0.698
20–29	103 (13.4%)	91 (88.3%)	12 (11.7%)		
30–39	208 (40.5%)	186 (89.4%)	22 (10.6%)		
40–49	457 (59.5%)	415 (90.8%)	42 (9.2%)		
Residence				2.628	0.105
Urban	459 (59.8%)	407 (88.7%)	52 (11.3%)		
Rural	309 (40.2%)	285 (92.2%)	24 (7.8%)		
Education level*1				15.364	<0.001*
Low	332 (43.2%)	302 (91.0%)	30 (9.0%)		
Middle	296 (38.5%)	276 (93.2%)	20 (6.8%)		
High	140 (18.2%)	114 (81.4%)	26 (18.6%)		
Occupation				17.610	0.001*

*1: married including married, remarried, and cohabitation

single including single, separated, divorced, or widowed

*2: Low means received 0-9years education,

middle means received 10-12years education,

high means received more than 12years of education

*3: 1¥≈ 0.1556\$

*4: repeated IA history means at least one previous IA

Variables	Contraceptive methods			χ^2	P-value
	Total (n = 768)	Reliable (n = 692)	Unreliable (n = 76)		
Unemployed	113 (14.7%)	98 (86.7%)	15(13.3%)		
Famer or worker	285 (37.1%)	272 (95.4%)	13(4.6%)		
Professional or Administrative staff	134 (17.4%)	112 (83.6%)	22(16.4%)		
Staff Business or Service personnel	200 (26.0%)	177 (88.5%)	23(11.5%)		
Others	36 (4.7%)	33 (91.7%)	3(8.3%)		
Marital status*2				0.054	0.816
Being single	45 (5.9%)	41(91.9%)	4(8.9%)		
Being married	723 (94.1%)	651(90.0%)	72(10.0%)		
Personal monthly income (¥*3)				1.478	0.687
None	108 (14.1%)	97(89.8%)	11(10.2%)		
<3000	368 (47.9%)	336(91.3%)	32(8.7%)		
3000–4999	230 (29.9%)	205(89.1%)	25(10.9%)		
≥ 5000	62 (8.1%)	54(87.1%)	8(12.9)		
Family monthly income (¥*3)				1.830	0.401

*1: married including married, remarried, and cohabitation

single including single, separated, divorced, or widowed

*2: Low means received 0-9years education,

middle means received 10-12years education,

high means received more than 12years of education

*3: 1¥≈ 0.1556\$

*4: repeated IA history means at least one previous IA

Variables	Contraceptive methods			χ^2	P-value
	Total (n = 768)	Reliable (n = 692)	Unreliable (n = 76)		
<3000	151 (19.7%)	132(87.4%)	19(12.6%)		
3000–4999	205 (26.7%)	188(91.7%)	17(8.3%)		
≥ 5000	412 (53.6%)	372(90.3%)	40(9.7%)		
Number of children				0.002	0.968
≤ 1	416 (54.2%)	375(90.1%)	41(9.9%)		
≥ 2	352 (45.8%)	317(90.1%)	35(9.9%)		
The experience about IAs and PAFPS					
Induced abortion history*4				0.614	0.685
1	411 (53.5%)	372(90.5%)	39(9.5%)		
≥ 2	357 (46.5%)	320(89.6%)	37(10.4)		
What method did you use in the last induced abortion?				9.990	0.019*
Medical abortion	105 (13.7%)	101(96.2%)	4(3.8%)		
Painless surgical abortion	402 (52.3%)	354(88.1%)	48(11.9%)		
Non-painless surgical abortion	177 (23.0%)	165(93.2%)	12(6.8%)		
*1: married including married, remarried, and cohabitation					
single including single, separated, divorced, or widowed					
*2: Low means received 0-9years education,					
middle means received 10-12years education,					
high means received more than 12years of education					
*3: 1¥≈ 0.1556\$					
*4: repeated IA history means at least one previous IA					

Variables	Contraceptive methods			χ^2	P-value
	Total (n = 768)	Reliable (n = 692)	Unreliable (n = 76)		
Medical and surgical abortion	84 (10.9%)	72(85.7%)	12(14.3%)		
Were you satisfied with the last induced abortion?				1.214	0.545
Satisfied	459 (59.8%)	412(89.8%)	47(10.2%)		
So-so	274 (35.7%)	250(91.2%)	24(8.8%)		
Dissatisfied	35 (4.6%)	30(85.7%)	5(14.3%)		
Have you been followed up after the last induced abortion?				5.089	0.024
No	331 (43.1%)	289(87.3%)	42(12.7%)		
Yes	437 (56.9%)	403(92.2%)	34(7.8%)		
What contraceptive methods did the service providers tell you?				35.884	<0.001*
Unreliable methods	24 (3.1%)	13 (54.2%)	11 (45.8%)		
Reliable methods	744 (96.9%)	679 (91.3%)	65 (8.7%)		
How did the service providers introduce contraceptive methods to you?				2.251	0.324
Recommend the most appropriate method	302 (39.3%)	271(89.7%)	31(10.3%)		
Recommend various methods	445 (57.9%)	404(90.8%)	41(9.2%)		
Others	21 (2.7%)	17(81.0%)	4(19.0%)		

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middle means received 10-12years education,

high means received more than 12years of education

*3: 1¥≈ 0.1556\$

*4: repeated IA history means at least one previous IA

Variables	Contraceptive methods			χ^2	P-value
	Total	Reliable	Unreliable		
	(n = 768)	(n = 692)	(n = 76)		
Were you informed about the side effects of the contraceptive methods?				1.685	0.194
No	122 (15.9%)	106(86.9%)	16(13.1%)		
Yes	646 (84.1%)	586(90.7%)	60(9.3%)		
Knowledge about induced abortion					
Scores				5.646	0.227
0	249 (32.4%)	232(93.2%)	17(6.8%)		
1	149 (19.4%)	132(88.6%)	17(11.4%)		
2	184 (24.0%)	167(90.8%)	17(9.2%)		
3	124 (16.1%)	109(87.9%)	15(12.1%)		
4	62 (8.1%)	52(83.9%)	10(16.1%)		
*1: married including married, remarried, and cohabitation					
single including single, separated, divorced, or widowed					
*2: Low means received 0-9years education,					
middle means received 10-12years education,					
high means received more than 12years of education					
*3: 1¥≈ 0.1556\$					
*4: repeated IA history means at least one previous IA					

Table 2

Binary logistic regression analysis of the relevant factors of contraceptive methods using (n = 768)

Model a ^{*5}					Model b ^{*6}			
variables	SE	P	AORs	95% CIs	SE	P	CORs	95% CIs
Occupation								
Unemployed	-	-	-	-	-	-	-	-
Farmer or Worker	0.420	0.004*	0.297	0.130– 0.678	0.425	0.004*	0.297	0.129– 0.683
Professional or Administrative staff	0.437	0.946	1.030	0.437– 2.426	0.457	0.607	1.256	0.517– 3.095
Staff business or Service personnel	0.382	0.679	0.854	0.404– 1.805	0.399	0.901	1.051	0.481– 2.297
Others	0.745	0.158	0.350	0.081– 1.506	0.749	0.243	0.417	0.096– 1.810
Family monthly income (¥)								
<3000					-	-	-	-
3000–4999					0.389	0.042*	0.454	0.212– 0.973
≥ 5000					0.353	0.026*	0.455	0.228– 0.909
What method did you use in the last induced abortion?								
Medical abortion	-	-	-	-	-	-	-	-
Painless surgical abortion	0.546	0.027*	3.353	1.151– 9.769	0.551	0.024	3.465	1.177– 10.201
Nonpainless surgical abortion	0.607	0.328	1.811	0.551– 5.949	0.613	0.303	1.879	0.566– 6.246
Medical and surgical abortion	0.624	0.080	2.987	0.879– 10.145	0.628	0.058	3.290	0.961– 11.261
Have you been followed up by medical staff after the last induced abortion?								
No	-	-	-	-	-	-	-	-

*5: model a was adjusted the factors who are significance in Table 1.

*6: model b was adjusted the whole potential factors

	Model a* ⁵				Model b* ⁶			
Yes	0.262	0.009*	0.506	0.303– 0.846	0.265	0.021	0.538	0.323– 0.914
What contraceptive methods did the service providers tell you?								
Unreliable methods	-	-	-	-	-	-	-	-
Reliable methods	0.469	<0.001*	0.109	0.044– 0.274	0.476	<0.001*	0.083	0.039– 0.250
*5: model a was adjusted the factors who are significance in Table 1.								
*6: model b was adjusted the whole potential factors								

Table 3
The desired way to get relevant knowledge (n = 768)

The wanted way	N	%
Medical stuff	720	24
Radio/TV	447	14.9
Internet	457	15.2
WeChat/Microblog	447	14.9
Book/Newspaper/Magazine	281	9.4
Families/Friends	255	8.5
Leaflet	375	12.5
Others	20	0.7

Figures

Figure 1

The flow chart of this study

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix.docx](#)