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## OBSTETRICS

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# Compliance of Different Contraceptive Methods in Thai Women

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### ABSTRACT

**Objective:** To evaluate the compliance of different contraceptive methods, i.e., combined oral contraceptive pills (OCPs), progestin-only injectable (DMPA), condoms, intrauterine devices (IUDs) and progestin implants in Thai women and to evaluate factors affecting contraceptive users' compliance.

**Materials and Methods:** Women aged between 15-49 years old who had used contraceptive methods for at least 6 months were invited to participate in this study. Participants were interviewed for the correctness and consistency of contraceptive use. We defined compliance as correct (use) and consistency in using these contraceptive methods.

**Results:** The compliance of contraceptive methods were 96.7% for DMPA, 83.4% for IUDs, 72.3% for progestin implants, 65.1% for OCPs and 32.7% for condoms. Compliance of OCPs and condoms were associated with the levels of education. Compliance of IUDs was inversely related to the income. No factors were found to be associated with the compliance of DMPA and progestin implants.

**Conclusion:** DMPA, IUDs and progestin implants which required less users' attention revealed good compliance while OCPs and condoms showed poor compliance. This may reflect the improper knowledge of users and practicality of the contraceptive methods.

**Keywords:** Compliance, contraception, oral contraceptive pills, progestin-only injectable, condoms, intrauterine devices, progestin implants.

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## Introduction

Nowadays, there are many contraceptive methods available in Thailand. More common methods used in reproductive women were combined oral

contraceptive pills (OCPs), progestin-only injectable (DMPA), condoms, intrauterine devices (IUDs) and progestin implants, respectively. Theoretically, these methods have low failure rates. However, there was a

significantly higher failure rate in the use of these contraceptive methods in typical women compared to the theoretical usage<sup>(1)</sup>. The pregnancy rate in typically use women was higher than in perfect use women due to their compliance. The high failure rate of contraceptive use is a contributing cause of unwanted pregnancy; hence, desire for abortion and other unexpected consequences. Therefore, improvement of the compliance of the user can reduce the rate of unwanted pregnancy.

From this fundamental fact, the authors conducted this study to evaluate the patient's compliance on common contraceptive methods.

There are a small number of studies on the compliance of contraceptive use. In 1998, Michael J, et al., found that almost half of the patients in their study forgot to take a pill daily<sup>(2)</sup>. Corresponding to the study of Hubacher D, et al. In new DMPA users, the 3-, 6-, 9-, and 12-month continuation rates were 68%, 67%, 55%, and 51%, respectively<sup>(3)</sup>. In contrast, long acting reversible contraceptive methods had more satisfaction and continuation rate. These emphasize the benefit of this study in revealing the rate of compliance and associated factors of each contraceptive method. This finding can be used to advise patients on choosing contraception.

## Materials and Methods

This study was a descriptive study conducted at the Family Planning Clinic, King Chulalongkorn Memorial Hospital (KCMH), Bangkok, Thailand from June 2013 to July 2014. The study protocol has been approved by the Ethics Committee of the Faculty of Medicine, Chulalongkorn University.

Women of reproductive age who visited our Family Planning Clinic were invited to participate in this study. The inclusion criteria were: 1) women aged 15-49 years old; 2) were sexually active; 3) had used any of these following contraceptive methods: condoms, OCPs, DMPA, IUDs, progestin implants for at least 6 months prior to the participation.

The pilot study was conducted to obtain the accurate sample size. In total, 75 women were recruited. The sample sizes were then calculated using the

formula:

$$n = (Z_{\alpha/2})^2 PQ / d^2$$

n = Sample size

$$Z_{\alpha/2} = 1.96$$

P = Compliance of contraceptive methods

$$Q = 1 - P$$

d = Acceptable error = 10%

P-values for each contraceptive method were 0.48 in OCPs, 0.68 in DMPA, 0.27 in condoms, 0.40 in IUDs, and 0.60 in progestin implants. The calculated sample sizes of each method were: 95 women for OCPs; 24 women for DMPA; 86 women for condoms; 96 women for IUDs and 93 women for progestin implants.

The case record forms were developed for the five contraceptive methods. Each form was divided in two parts: 1) correctness of use and 2) consistency of use.

The case record forms included the following:

1. OCPs: types of OCPs, method of taking the pills, numbers of pills left after the end of the cycle.
2. DMPA: visiting the Family Planning Clinic as scheduled, reason for missing the appointment.
3. Condoms: timing and process of use, lubrication, preventive methods after failed use and discontinuation.
4. IUDs: checking IUD strings after having periods and sexual activity.
5. Progestin implants: visiting the Family Planning Clinic as scheduled, recognizing their implants' expiration date.

All participants were asked about their motivation and satisfaction of each contraceptive method. Demographic data including age, marital status, level of education, income, number of children and desire for future fertility were collected

In this study, the authors defined compliance of contraceptive methods as correct and consistent use according to the guideline of our Family Planning Clinic that was adapted from "Family Planning: A Global Handbook for Providers 2011"<sup>(4)</sup>.

The compliance included all of the following:

1. OCPs:

- Correct starting of the first pill.
- If participants forgot to take the pills, there must be less than three pills left in that cycle with appropriate back-up method use.

2. DMPA:

- Visiting the Family Planning Clinic as scheduled

3. Condoms:

- Use a new condom for every act of sex
- Correct timing and process of uses
- Appropriate lubrication
- Appropriate back-up method use after failure and discontinuation.

4. IUDs:

- Visiting the Family Planning Clinic as scheduled

5. Progestin implants:

- Visiting the Family Planning Clinic as scheduled
- Recognizing their implants' expiration date

Informed consent was obtained from each participant. Trained interviewers conducted face-to-face interview. Data were collected on case record forms.

Demographic data were determined as mean with standard deviation. Percentages of compliance of contraceptive methods were calculated. Chi-square and binary logistic regression analysis were carried out to determine the factors associated with the compliance. The analysis was conducted using the SPSS version 17.0.

## Results

Of the 964 eligible women recruited, 295 used OCPs, 185 used DMPA, 220 used condoms, 151 used IUDs and 113 used progestin implants. Table 1 summarizes the descriptive characteristics of the participants. Women in this study had a mean (standard deviation) age of 33.0 (8.5) years. Most participants were married (79.6%) and multiparous (74.8%); and they were not desirous of fertility (55.1%).

**Table 1.** Characteristics of the participants.

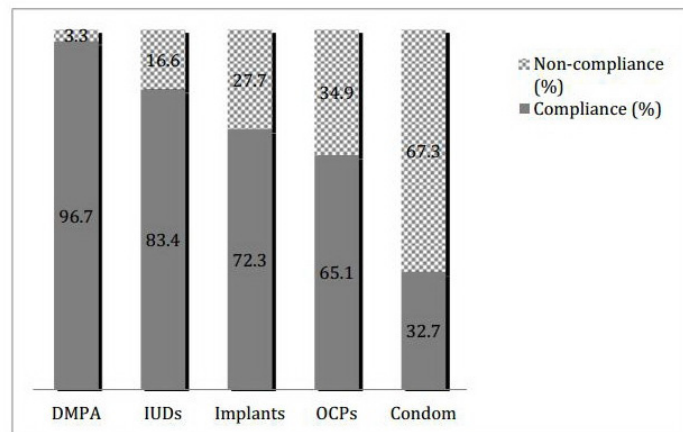
	<b>Total (n=964)</b>	<b>OCPs (n=295)</b>	<b>DMPA (n=185)</b>	<b>Condoms (n=220)</b>	<b>IUDs (n=151)</b>	<b>Progestin implants (n=113)</b>
<b>Age (Mean ± SD)</b>	33.0 ± 8.5	32.0 ± 8.0	32.4 ± 9.0	32.6 ± 7.8	37.0 ± 8.3	31.9 ± 9.1
<b>Age group</b>						
< 20 years	55 (5.7%)	13 (4.4%)	16 (8.6%)	9 (4.1%)	1 (0.7%)	16 (15.2%)
≥ 20 years	851 (94.3%)	282 (95.6%)	169 (91.4%)	211 (95.0%)	150 (99.3%)	89 (84.8%)
<b>Marital status</b>						
Single	179 (18.6%)	58 (19.6%)	27 (14.6%)	64 (29.1%)	12 (7.9%)	21 (20.0%)
Married	797 (79.6%)	234 (79.3%)	157 (84.9%)	150 (68.2%)	135 (89.4%)	80 (76.2%)
Divorced	18 (1.9%)	3 (1.1%)	1 (0.5%)	6 (2.7%)	4 (2.6%)	4 (3.8%)
<b>Education</b>						
No education	40 (4.1%)	6 (2.0%)	14 (7.6%)	9 (4.1%)	5 (3.3%)	6 (4.0%)
Primary School	144 (14.9%)	39 (13.2%)	34 (18.4%)	13 (5.9%)	36 (23.8%)	22 (14.6%)
High school	278 (28.8%)	84 (28.5%)	64 (34.6%)	57 (25.9%)	36 (23.8%)	35 (23.2%)
Diploma	133 (13.8%)	41 (13.9%)	18 (9.7%)	37 (16.8%)	17 (11.3%)	16 (10.6%)
Bachelor's degree	333 (34.5%)	109 (36.9%)	52 (28.1%)	95 (43.2%)	52 (34.4%)	24 (15.9%)

**Table 1.** Characteristics of the participants. (Cont.)

	Total (n=964)	OCPs (n=295)	DMPA (n=185)	Condoms (n=220)	IUDs (n=151)	Progestin implants (n=113)
Higher than Bachelor's Degree	36 (3.7%)	16 (5.4%)	3 (1.6%)	9 (4.1%)	5 (3.3%)	2 (1.3%)
<b>Income (baht per month)</b>						
<10,000	188 (19.5%)	84 (28.5%)	42 (22.7%)	24 (10.9%)	15 (9.9%)	23 (15.2%)
10,000-19,999	341 (35.4%)	97 (32.9%)	80 (43.2%)	55 (25.0%)	59 (39.1%)	45 (29.8%)
20,000-29,999	269 (27.9%)	71 (24.1%)	42 (22.7%)	95 (43.2%)	40 (26.5%)	21 (13.9%)
≥30,000	166 (17.2%)	43 (14.6%)	21 (11.4%)	46 (20.9%)	37 (24.7%)	16 (10.6%)
<b>Number of children</b>						
0	243 (25.2%)	84 (28.5%)	22 (11.9%)	87 (39.5%)	27 (17.9%)	23 (15.2%)
1	427 (44.3%)	120 (40.7%)	97 (52.4%)	92 (41.8%)	62 (41.1%)	55 (36.4%)
2	238 (24.7%)	72 (24.4%)	53 (28.6%)	35 (15.9)	51 (33.8%)	21 (13.9%)
3	46 (4.8%)	14 (4.7%)	12 (6.5%)	5 (2.3%)	10 (6.6%)	4 (2.6%)
4	9 (0.9%)	4 (1.4%)	1 (0.5%)	1 (0.5%)	1 (0.7%)	2 (1.3%)
5	1 (0.1%)	1 (0.3%)	0	0	0	0
<b>Desire for future fertility</b>						
No	531 (55.1%)	129 (43.9%)	115 (62.2%)	96 (43.6%)	113 (74.8%)	74 (49.0%)
Uncertain	317 (32.9%)	106 (36.1%)	55 (29.7%)	97 (44.1%)	28 (18.3%)	27 (17.9%)
Yes	115 (11.9%)	59 (20.1%)	15 (8.1%)	27 (12.3%)	10 (6.6%)	4 (2.6%)

The compliance of the contraceptive methods were 96.7% in DMPA, 83.4% in IUDs, 72.3% in

progestin implants, 65.1% in OCPs, and 32.7% in condoms. (Fig. 1)

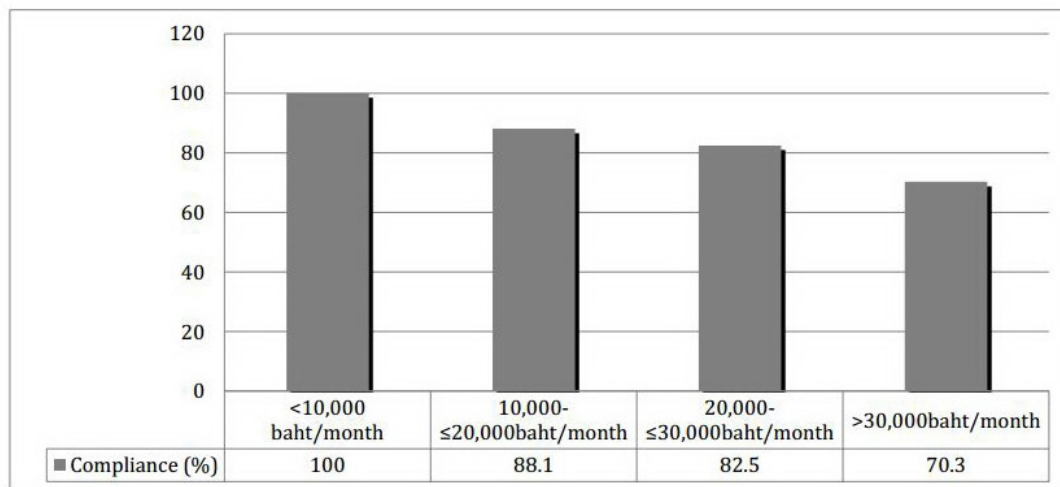


**Fig. 1.** Percentage of compliance and non-compliance in each contraceptive method

It was found that, almost all participants who used DMPA had good compliance (96.7%). Median duration of DMPA use was 2 years (6 months – 20 years). Most of them, 131 (71.2%) never missed their appointments for injection, and 47 (25.5%) of them were only late within one week. The most common reasons for missing their appointments were forgetfulness (61.1%) and inconvenience in traveling to the Family Planning Clinic (23.6%). Most participants who missed their appointments had good back-up methods, including abstinence (32.5%), condoms use (24.7%). However, 22.1% of them did nothing for birth control. As this method had very high compliance; factors affecting the compliance could not be demonstrated. The leading causes for choosing DMPA were: reasonable price (91.9%), high efficacy (91.8%), and

convenience (89.7%).

In all, 83.4% of IUDs' users were compliant. Median duration of IUDs use was 3 years (6 months – 20 years and 6 months). Interestingly, most of the users seldom palpate IUDs' strings after periods and sexual intercourse as instructed. This means that 67.5% of users palpated the string after periods and only 39.1% palpated the string after having sex. Compliance was higher in the married women (86.3%) compared to those who were not married (65.0%) ( $p=0.017$ ). Multiparous women had higher percentage of compliance (86.3%) than nulliparous women (70.4%) ( $p=0.44$ ). Percentage of compliance was inversely related to the income as shown in Fig. 2. ( $p=0.035$ ). Compliance was not associated with age, level of education or future fertility need.



**Fig. 2.** Compliance of IUDs in different levels of income.

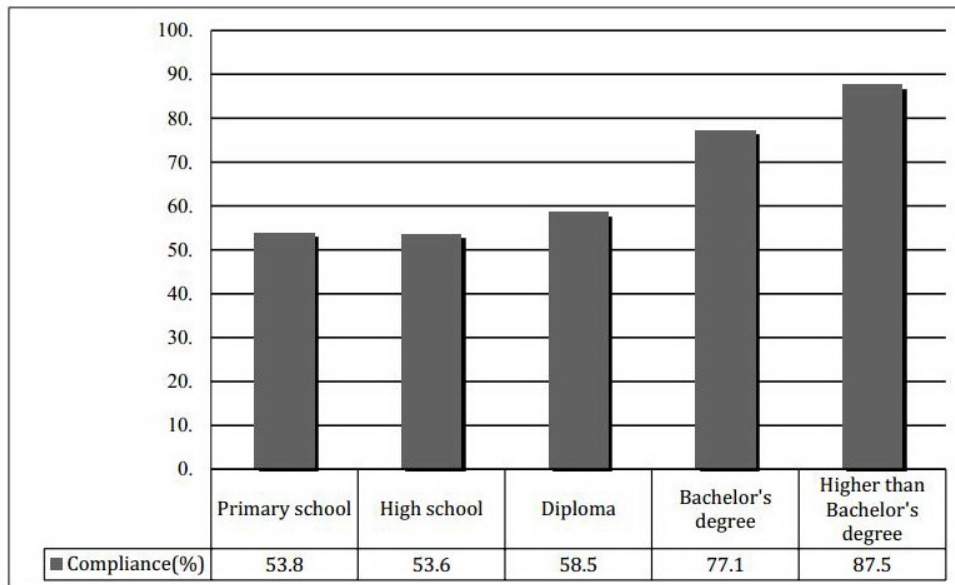
In progestin implants users, the median duration of use was 2 years (6 months – 30 years). The compliance was found to be 72.3%. Similar to DMPA, these methods had high rate of compliance, so it was not statistically associated with any factor. The leading causes for choosing progestin implants were convenience (94.7%), high efficacy (93.8%) and acceptable side effects (89.4%).

The compliance of OCPs was 65.1% in our study. The median time of OCPs usage was 2 years and 4.5

months (6 months – 26 years). The majority of the women (62.0%) used OCPs of 21 tablets per pack while 33.9% used those of 28 tablets per pack OCPs. There were 132 women (45.1%) who forgot to take the pills. Among these, 74.1% forgot only one pill, 20.9% forgot two pills, 3.6% forgot three pills and 1.6% forgot more than three. Half of them (53.2%) took additional pills for birth control. Compliance was statistically associated with the level of education as shown in Fig. 3. Higher level of education was associated with higher

percentage of compliance in OCPs users ( $p=0.003$ ). Other factors, including age, marital status, income,

parity and future fertility need were not statistically associated with compliance.

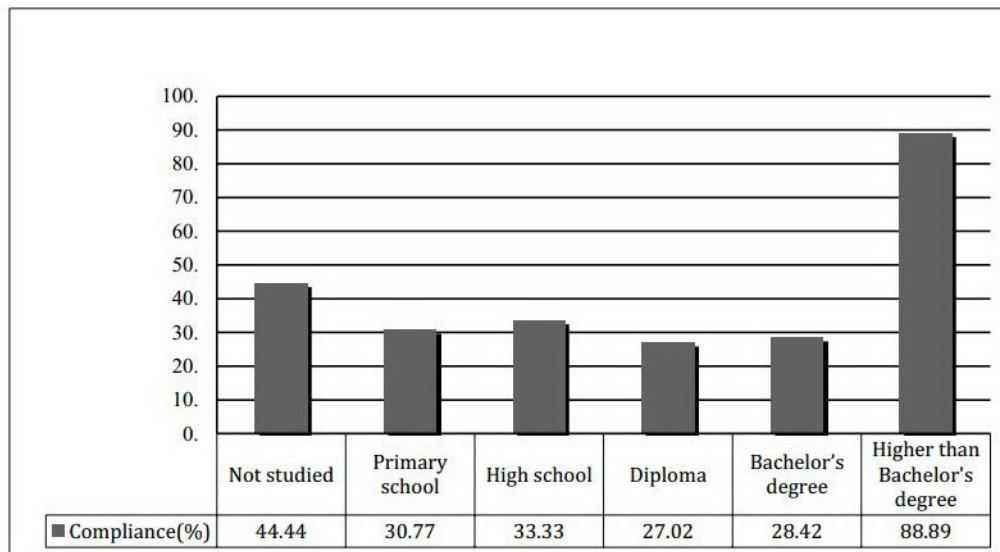


**Fig. 3.** Compliance of OCPs in different levels of education.

The main reasons for choosing OCPs for birth control were: high efficacy (95.6%) and convenience of use (94.9%). Other reasons included availability (94.2%) and reasonable price (94.2%).

Only 32.7% of the condoms users were compliant. The median duration of condoms use was 2 years (6 months – 20 years). Approximately one-fourth of the participants (27.3%) never checked the condoms package and the expiration date. Twenty-three

participants (10.5%) used petroleum jelly products for lubrication. In contrast, almost half of the participants (41.8%) reported no incidence of condoms leakage or breakage. Compliance was statistically associated with the level of education as shown in Fig. 4. Persons who graduated higher than Bachelor’s degree had higher percentage of condoms compliance ( $p=0.003$ ). Compliance was not associated with age, marital status, income, parity or future fertility need.



**Fig. 4.** Compliance of condoms in different levels of education.

The compliance of each contraceptive method was not statistically different between age groups. There were no factors that associated with compliance of DMPA and progestin implants.

## Discussion

This was the first study in Thailand that identified compliance of 5 common contraceptive methods and their associated factors. Previous studies were conducted to evaluate compliance of only one kind of contraception. Many interesting and useful informations about contraceptive compliance were found in our study. DMPA and progestin implants had high rates of compliance as both methods do not need much attention from the users. Injection and progestin implants can be used effectively without much difficulty. The compliance of DMPA found in our study was higher than in earlier study by Hubacher D, et al., (which showed that, 3-month continuation rate was only 68% this can be explained by reasonable price and availability of DMPA in our country<sup>(3)</sup>).

Women who use IUDs need to have the device inserted at the clinics or hospitals. Self-examination of the IUDs strings is encouraged to check whether the IUDs are in place. We found that many users did not examine IUDs strings as advised. This might be due to

unfamiliarity and discomfort. However, most women (83.4%) were compliant by returning to the clinic for follow-up visits as scheduled. This reflected that even the IUDs strings were inconvenient to palpate, the users still had good intention on birth control. Nevertheless, IUDs have high contraceptive efficacy that is not largely depended on the users. An interesting finding from our study is that higher percentage of compliance of this method was found in the low-income group.

From the OCPs users' viewpoint, they perceived that the pills were easy to use, but in fact only 65.1 % of the OCPs took the pills correctly and consistently. This finding was in line with a previous study by Michael J, et al<sup>(2)</sup>. Since pills usage needs high discipline, regularity and memorize, women with higher education had higher rate of compliance as shown in our study.

The compliance in condoms users was only 32.7%, which is the lowest among all contraceptive methods in our study. Furthermore, 10.5% used petroleum jelly for lubrication, which is not recommended since this kind of lubricant increases the failure rate of condoms. Possible explanation for these findings is that most condoms users had inadequate/incorrect knowledge on the method. This emphasizes the importance of providing correct information while counseling on the use of this method.

This study enrolled a large number of reproductive age women who used different kinds of contraceptive methods. Besides the compliance and their associated factors, this study also identified the reasons for choosing contraceptive methods. Findings from the present study are useful for health-care providers for selection of appropriate contraceptive methods for their clients.

This study was conducted at the Family Planning Clinic of KCMH, which is a tertiary hospital. Mostly, patients who asked for medical advice at this clinic were those who were concerned with their birth control methods and wellness. They generally received standard advice from the nurses and trained healthcare providers. Hence, compliance in this study might not represent that of the general population.

These initial findings point out to a need of future study. Future researches should be conducted to evaluate compliance in the general population and new technique for improving compliance of each contraceptive method.

## Conclusions

Theoretically, long-acting reversible contraceptive methods (IUDs and progestin implants) have lower failure rates compare to short-acting reversible contraceptive methods (OCPs, DMPA, condoms). Also, long-acting reversible contraceptive methods have higher percentage of compliance because these methods do not need much attention from users. In this study, compliance of OCPs and condoms were associated with the levels of education. Compliance of IUDs was inversely related to the income. No factors were found to be associated with the compliance of DMPA and progestin implants.

## Acknowledgment

Assoc. Prof. Dhiraphongs Charoenwit, head of the Dept. of OB&GYN, KCMH

The research assistant team of the Family Planning Clinic, KCMH

## Conflict of interest

There was no conflict of interest in this study.

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## ความถูกต้องและความสม่ำเสมอของการคุมกำเนิดในสตรีไทย

### ภิญญดา ปัญญารานันท์, สมสุข สันติเบญจกุล, อรรณพ ใจสำราญ

**บทนำ:** ปัจจุบันมีการคุมกำเนิดที่หลากหลายในประเทศไทย โดยวิธีที่นิยมได้แก่ ยาเม็ดคุมกำเนิด ยาฉีดคุมกำเนิด ถุงยางอนามัย ห่วงอนามัย และยาฝัง ในทางทฤษฎีแล้ว การคุมกำเนิดดังกล่าวมีอัตราความล้มเหลวค่อนข้างต่ำ โดยจะต้องใช้อย่างถูกต้องและสม่ำเสมอ การศึกษานี้จึงจัดทำขึ้นเพื่อศึกษาความถูกต้องและความสม่ำเสมอของการคุมกำเนิด รวมถึงปัจจัยที่มีผลต่อความถูกต้องและความสม่ำเสมอของการคุมกำเนิดดังกล่าว

**วัตถุประสงค์และวิธีการ:** การศึกษานี้เป็นการศึกษาเชิงพรรณนา เก็บข้อมูลจากสตรีอายุ 15-49 ที่ใช้วิธีการคุมกำเนิดดังกล่าวอย่างน้อย 6 เดือน โดยข้อมูลที่ศึกษาเกี่ยวกับวิธีคุมกำเนิด ความถูกต้อง และความสม่ำเสมอของการใช้วิธีคุมกำเนิด

**ผลการศึกษา:** จากการรวบรวมข้อมูลจากสตรี 964 ราย ความถูกต้องและความสม่ำเสมอของวิธีต่างๆ ดังนี้ ยาฉีดคุมกำเนิดคิดเป็นร้อยละ 96.7 ห่วงอนามัยคิดเป็นร้อยละ 83.4 ยาฝังคุมกำเนิดคิดเป็นร้อยละ 72.3 ยาเม็ดคุมกำเนิดคิดเป็นร้อยละ 65.1 และถุงยางอนามัยคิดเป็นร้อยละ 32.7 โดยพบว่าความถูกต้องและความสม่ำเสมอของยาเม็ดคุมกำเนิดและถุงยางอนามัยสัมพันธ์กับระดับการศึกษาของผู้ใช้ ความถูกต้องและความสม่ำเสมอของห่วงอนามัยแปรผกผันกับรายได้ของผู้ใช้ และไม่พบปัจจัยที่สัมพันธ์กับความถูกต้องและความสม่ำเสมอของยาฉีดคุมกำเนิดและยาฝังคุมกำเนิด

**สรุป:** พบว่าความถูกต้องและความสม่ำเสมอในการใช้ยาฉีดคุมกำเนิด, ห่วงคุมกำเนิดและยาฝังคุมกำเนิดค่อนข้างสูง เนื่องจากวิธีการคุมกำเนิดทั้งสามชนิดนี้เป็นการคุมกำเนิดที่ไม่ต้องอาศัยความร่วมมือจากผู้ใช้มากนัก ตรงกันข้ามกับยาเม็ดคุมกำเนิดและถุงยางอนามัย พบว่ามีความถูกต้องและความสม่ำเสมอในการใช้ที่ต่ำกว่า