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## GYNAECOLOGY

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# Decision-Making Regarding the Continuation of Contraceptive Implant within 1 Year of Childbirth: A Comparison between Adolescents Receiving Individual Counseling through Print Media and Adolescents Receiving Video-Based Group Counseling

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### ABSTRACT

**Objectives:** To compare the continuation rates of contraceptive implant within 1 year of childbirth between adolescents receiving individual counseling through educational brochures and adolescents receiving video-based group counseling.

**Materials and Methods:** This research was a prospective study of non-inferior trials in 272 postpartum adolescent mothers which compared between individual counseling and video-based group counseling. The video was created with introductory content about all methods of contraception including their advantages and side effects. The decision-making regarding the continuation of contraceptive implant usage would then be followed-up within 1 year. Criterion for non-inferiority was at a lower limit of  $< -7\%$  for the 95% confidence interval (CI).

**Results:** The adolescent mothers in this study were at the average age of 17 years old, and most of them were living with their husbands. The follow-up found that the decision rates of continuing the use of contraceptive implants comparing between those who received video-based group counseling and individual counseling at 6 months were 77% and 72.8% (95% CI = -5.8, 14.2), at 1 year were 69.4% and 65.0% (95% CI = -6.4, 15.3), with the lower confidence limit being inside the non-inferiority limit of  $-7\%$ . It can be interpreted that video-based group counseling was not less effective than individual counseling at 6 months and 1 year.

**Conclusion:** Evidence of non-inferiority was noted comparing individual counseling and video-based group counseling. The systematic and complete provision of information would facilitate the decision-making of adolescents, hence increasing the continuation rate of contraceptive implant.

**Keywords:** contraceptive implant, adolescents, continuation, video.

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# การเปรียบเทียบการตัดสินใจคงใช้ยาฝังคุมกำเนิดของมารดาวัยรุ่นหลังคลอดภายใน 1 ปี เปรียบเทียบกลุ่มให้คำปรึกษาแบบรายบุคคลจากแผ่นพับและป้ายให้ความรู้กับการให้ความรู้แบบกลุ่มจากสื่อวีดิทัศน์

ธีรพันธุ์ สิ้นหนาทวงศ์, สิริยา กิติโยดม

## บทคัดย่อ

**วัตถุประสงค์:** เปรียบเทียบอัตราการตัดสินใจคงใช้ยาฝังคุมกำเนิดของมารดาวัยรุ่นหลังคลอดใน 1 ปี ระหว่างให้ความรู้รายบุคคลจากแผ่นพับและป้ายให้ความรู้ กับให้ความรู้แบบกลุ่มจากสื่อวีดิทัศน์

**วัสดุและวิธีการ:** วิจัยแบบการทดสอบที่แสดงความไม่ด้อยกว่าแบบไปข้างหน้า ในมารดาวัยรุ่นหลังคลอดที่ฝังยาคุมกำเนิดจำนวน 272 คน เปรียบเทียบกลุ่มให้ความรู้แบบรายบุคคล กับกลุ่มให้ความรู้จากสื่อวีดิทัศน์โดยวิดีโอจะแนะนำวิธีการคุมกำเนิดทั้งข้อดี ผลข้างเคียง ติดตามการตัดสินใจคงใช้ยาฝังคุมกำเนิดภายใน 1 ปี ค่าที่ยอมรับได้คือมากกว่า -7 ของค่าความเชื่อมั่นที่ 95

**ผลการศึกษา:** มารดาวัยรุ่นที่ศึกษานี้ มีอายุเฉลี่ย 17 ปี ส่วนใหญ่อยู่กับสามี พบว่า อัตราการตัดสินใจคงใช้ยาฝังคุมกำเนิดหลังคลอด เปรียบเทียบให้ความรู้แบบกลุ่มกับให้ความรู้รายบุคคลที่ 6 เดือนเท่ากับร้อยละ 77 และ 72.8 (ช่วงความเชื่อมั่นเท่ากับ -5.8, 14.2), ที่ 1 ปี เท่ากับร้อยละ 69.4% และ 65.0 (ช่วงความเชื่อมั่นเท่ากับ -6.4, 15.3), ค่าต่ำที่สุดของช่วงความเชื่อมั่นน้อยกว่า ค่าที่ยอมรับได้ที่ตั้งไว้ แปลผลว่าการให้ความรู้แบบกลุ่มมีประสิทธิภาพไม่ด้อยกว่าการให้ความรู้แบบรายบุคคลที่ 6 เดือน และ 1 ปี

**สรุป:** การให้ความรู้แบบกลุ่มมีประสิทธิภาพไม่ด้อยกว่า การให้ความรู้แบบรายบุคคล ในเรื่องอัตราการตัดสินใจคงใช้ยาฝังคุมกำเนิดที่ 6 เดือน และ 1 ปี การให้ข้อมูลอย่างเป็นระบบ ช่วยเพิ่มอัตราการตัดสินใจคงใช้ได้

**คำสำคัญ:** ยาฝังคุมกำเนิด, วัยรุ่น, การคงอยู่, สื่อวีดิทัศน์

## Introduction

Adolescent pregnancy refers to any pregnancy that occurs in females between 11 and 19 years of age<sup>(1)</sup>. Indeed, adolescent pregnancy is considered a major problem across the globe. According to the World Health Organization which conducted a study on 124,446 pregnant women, adolescent pregnancy is associated with increased risk of poorer health and well-being for both the mother and the baby<sup>(2)</sup>. With that respect, adolescent pregnancy is used as the indicator to reflect the development of population health in each country<sup>(3)</sup>. Regarding Thailand, the adolescent pregnancy rate was found to be 53.8 pregnancies per 1,000 females aged 15-19 years<sup>(6)</sup>. The Department of Health, Ministry of Public Health, has set a target to reduce the foregoing rate to 40 pregnancies per 1,000 females aged 15-19 years<sup>(6)</sup> and implemented the adolescent pregnancy prevention program. The essence of such program includes promoting the provision of contraceptive implants and intrauterine devices (IUDs) to females under 20 years of age who are in the postpartum period, have a miscarriage, or are seeking contraception, regardless of their rights to health. Ultimately, the program is aimed at providing adolescents with adequate access to permanent birth control options<sup>(5)</sup>.

Maharat Nakhon Ratchasima Hospital offers contraceptive implant services to females under 20 years of age who are in the postpartum period, have a miscarriage, or are seeking contraception, irrespective of their rights to health<sup>(5)</sup>. Prior to the administration of contraceptive implants, the hospital will provide counseling to adolescent patients who are classified into 2 groups based on the risks associated with their age group<sup>(5)</sup>; Group 1 comprises patients in early and middle adolescence who receive individual counseling with parental presence, and group 2 consists of patients in late adolescence who receive group counseling<sup>(5)</sup>. The counseling technique adopted by the hospital is the GATHER approach. According to a previous study, this approach is effective in facilitating the decision-making of patients regarding family planning. It entails a systematic process namely

greeting, active listening, telling, helping, explaining, and referring<sup>(6)</sup>.

With reference to the past data of Maharat Nakhon Ratchasima Hospital, the three-year continuation rate of contraceptive implants after 18 months of use was 55.8% in late adolescents who received group counseling, compared to 72% (2.11 times higher) in early and middle adolescents who received individual counseling with parental presence (95% confidence interval (CI) = 1.06, 4.19). The main contributor to the discontinuation of contraceptive implants was irregular bleeding. Moreover, it was found that patients who attended individual counseling sessions with their guardians were given detailed information in a systematic manner. The counselor jointly discussed and selected an appropriate contraceptive method with both the adolescent patient and the respective guardian. On the contrary, patients attending group counseling sessions were counseled by different counselors at the postnatal care facility, which could lead to insufficient information and lack of awareness of the disadvantages and side effects of contraceptive implants<sup>(5)</sup>. These results were consistent with the findings of previous studies conducted in other countries. According to the study of Grunloh et al, irregular bleeding had a significant effect on the discontinuation of contraceptive implants within 3 years of use<sup>(7)</sup>. In addition, the study of Nageso et al suggested that the discontinuation rate of contraceptive implants was statistically significantly higher in patients who were not given knowledge of the side effects prior to the implant, patients who did not choose the contraceptive method by themselves, and patients who did not visit a family planning center prior to the implant<sup>(8)</sup>.

Accordingly, the researchers are interested in developing an educational video to enhance the effectiveness of group counseling. Video will provide adolescents with information in a systematic and comprehensive manner, including the advantages, disadvantages, and side effects of contraceptive implants, while reducing the workload of instructors or counselors. Video-based group counseling is anticipated

to be as effective as individual counseling that uses brochures and boards as a means to provide knowledge to the adolescents.

## Materials and Methods

This research was a prospective study non-inferior trial of both approaches to counseling. The research was approved by the Research Ethics Committee of Maharat Nakhon Ratchasima Hospital. The sample consisted of postpartum adolescents aged 11-19 years who were desirous of receiving contraceptive implants at Maharat Nakhon Ratchasima Hospital during April 1, 2018 to August 30, 2018. Pregnant adolescents were given register at the labor room. Upon their consent to participate in the research, the participants were divided into 2 groups. The participants in group 1 were admitted to postpartum recovery building 1 and the participants in group 2 were admitted to postpartum recovery building 2.

The participants in group 1 were given individual counseling through the use of educational brochures and boards by postpartum nurses. Meanwhile, the participants in group 2 were given group counseling through the use of video. After that, interviews were conducted with the participants to collect data concerning their demographic characteristics, the decision on which method of contraception to use, and the confidence in selecting the appropriate contraceptive method. Telephone interviews were subsequently conducted with eligible participants after 6 months, and 1 year of childbirth to collect data about the side effects of the contraceptive implant and the intention to continue using the contraceptive implant for the full three-year period.

To prevent selection bias and contamination bias, it was necessary to gather all research participants (adolescent mothers who visited the hospital to give birth) and divide them into two groups from the time they were in the delivery room. Both groups would stay separately in different patient wards. After that, the two different methods of counselling would be provided. The number of people in the target group, the postpartum adolescent mothers who decided to continue using contraceptives implants, would be used

for the calculation of the primary outcome. The primary outcome was calculated and reported using the per protocol method.

The content of the video used in this study was based on credible sources. The composed content was reviewed by 3 experts from the fields of reproductive medicine, gynecology and counseling nurse to assess its accuracy and attractiveness before it was made into an animation video. The amount of time used for individual counselling was about 30-45 minutes per person, while the time for the video-based group counselling was about 30 minutes per group, divided into 10 minutes of video watching and 10-20 minutes of question and answer session.

A non-inferiority test was employed in the primary analysis to analyze the continuation rates of contraceptive implant within 1 year of childbirth, by using a one-tailed 95% confidence interval for the difference between the groups. If the lower limit of the confidence interval was  $< \delta$  (margin), it would imply that video-based group counseling is as effective as individual counseling in which educational brochures and boards are used.

The sample size was determined to be 272. According to the past data of Maharat Nakhon Ratchasima Hospital, the continuation rate of contraceptive implants was 72% in adolescents who received individual counseling through the use of educational brochures and boards<sup>(6)</sup>. Moreover, the results of a pilot study showed that the continuation rate of contraceptive implants was 55% in adolescents receiving group counseling. The researchers hypothesized that video-based group counseling was not inferior to individual counseling with respect to the adolescents' decision-making regarding the continuation of contraceptive implants within 1 year of childbirth. The minimum sample size was computed to be 136 participants per group ( $n = 272$ ) based on 80% power, two-sided  $\alpha$  level of 0.05 (i.e. the 2.5% upper limit of the CI), and the non-inferiority margin of -7%.

Student's t-test was used in the statistical analysis to compare continuous variables. Meanwhile, Pearson's chi-squared test and Fisher's exact test were employed to compare categorical variables. The

p values of less than 0.05 were regarded as statistically significant.

“Decision to discontinue using a contraceptive implant” was defined as either of the following: participants who within 1 month from the date of interview planned to have the Implanon® implant removed before 1 year of use but had not proceeded with the removal operation<sup>(5)</sup>; or participants who had the Implanon® implant removed before 1 year of use<sup>(5)</sup>.

## Results

A total of 344 adolescent mothers voluntarily agreed to participate in the research (Fig. 1). Group 1 consisted of 172 participants who received individual

counseling through the use of educational brochures and boards (print media); Group 2 consisted of 172 participants who received video-based group counseling. In group 1, 136 participants decided to use contraceptive implants, 18 decided to use contraceptive injection, 14 decided to use oral contraceptive pills, and 4 decided to terminate their contraception. In group 2, 136 participants decided to use contraceptive implants, 14 decided to use contraceptive injection, 16 decided to use oral contraceptive pills, and 6 decided to terminate their contraception. The participants were monitored, and data were collected after 6 months and 1 year of childbirth to conduct statistical analysis in order to examine the continuation rate of the contraceptive implant.

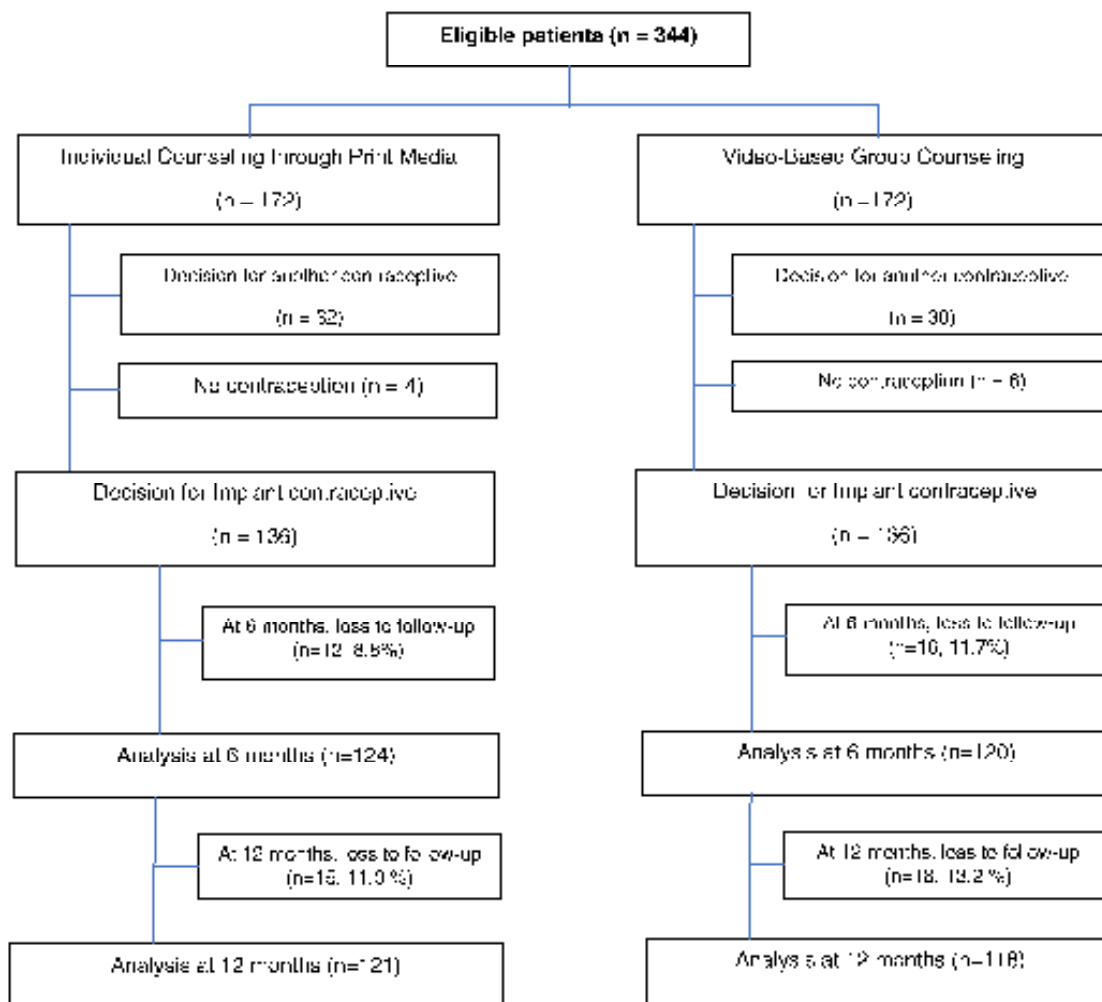


Fig. 1. Flow diagram of subject enrollment and follow-up.

According to Table 1, it was found that the postpartum adolescent mothers' average age was 17, and most of them were living with their husbands, currently taking leave from high school education, and would return after giving birth. Their previously used methods of contraception were condoms and oral contraceptive pills. These factors had an influence on

the decision of postpartum adolescents to use or not to use a contraceptive implant<sup>(5)</sup>, as well as affecting their decision on the continuation of a contraceptive implant for the full three-year period<sup>(5,7)</sup>. Upon analysis of the demographic characteristics of both groups, there were no significant differences between the groups.

**Table 1.** Baseline characteristic.

Baseline characteristics	Individual Counseling Through Print Media (n = 136)	Video-Based Group Counseling (n = 136)	p value
Age (years), mean ± SD	17.0 ± 1.39	17.1 ± 1.42	0.60
Parity, n (%)			
Nulliparity	124 (91.2%)	128 (94.1%)	0.72
Multiparity	12 (8.8%)	8 (5.9%)	0.71
History of abortion, n (%)	8 (5.9%)	7 (5.1%)	0.50
The highest education level, n (%)			
Grade 6	22 (16.2%)	21 (15.4%)	0.60
Grade 9	80 (58.8%)	74 (54.4%)	0.74
Grade 12	34 (25.0%)	41 (30.2%)	0.91
Relationship to husband, n (%)			
Live together	119 (87.5%)	122 (89.7%)	0.47
Divorce	10 (7.4%)	4 (2.9%)	0.25
Separate	7 (5.1%)	10 (7.4%)	0.90
Plan after delivery, n (%)			
Back to school	90 (66.2%)	95 (69.8%)	0.78
Housewife	39 (28.7%)	30 (22.1%)	0.55
Occupational	7 (5.1%)	11 (8.1%)	0.87
Experience in using other methods of contraception, n (%)			
Condom	79 (58.1%)	80 (58.8%)	0.86
Oral contraceptive	88 (64.7%)	101 (74.3%)	0.70
Emergency contraceptive	20 (14.7%)	25 (18.3%)	0.72
DMPA	35 (25.7%)	24 (17.6%)	0.53

SD: Standard deviation, DMPA: Depot Medroxyprogesterone Acetate

According to Table 2, the results showed that evidence of non-inferiority was noted comparing group counseling through the use of video with individual counseling through print media, specifically in respect of the three-year continuation of contraceptive implants after 6 months and 1 year of use. According to the data gathered from the follow-up with the participants, it

was found that 4 participants had the implant removed. Across these 4 participants, 1 had the implant removed after 3 months of use due to pain at the implant site, 2 had the implant removed after 6 months of use due to abnormal vaginal bleeding, and 1 had the implant removed after 1 year of use due to abnormal vaginal bleeding.



**Table 2.** Inferiority testing for group counseling compared with personnel counseling.

Rate for decision to continue implant for 3 year	Individual Counseling Through Print Media (N = 136)	Video-Based Group Counseling (N = 136)	Difference (95% confidence interval) <sup>a</sup>
At 6 months	105 (77.2%)	99 (72.7%)	4.2% (-5.5, 14.1)
At 12 months	93 (68.3%)	88 (64.7%)	4.0% (-6.2, 15.1)

<sup>a</sup> The criterion for non-inferiority was an lower limit of > -7% based on the upper 2.5% tail of the 95% confidence interval

According to Table 3, the follow-up on the side effects of the contraceptive implants found that the most common side effect was abnormal vaginal bleeding. Three out of 4 participants who decided to terminate their implantation reported having daily abnormal vaginal bleeding which had been occurring for several months. Even after receiving medical treatment, their abnormal bleeding did not get better and affected their daily life, thus they decided to have their implant removed. Another important side effect found was pain in the implant area which could lead to the removal of implantation. One participant was

found with too deep implantation, causing pain when lifting items. Therefore, implantation techniques are important as too-deep implantation may result in pain in the implant area, which leads to early removal of the contraceptive implantation. Other side effects found included headaches, stress, tiredness, fatigue, and weight loss which usually occurred together at the same time. These side effects may not be caused directly by contraceptive implants, but they were found as some of the reasons that make participants have their contraceptive implants removed prematurely.

**Table 3.** Rational for discontinue use implant at 12 months.

Rational for discontinue use implant at 12 months	Individual Counseling Through Print Media (N = 136)	Video-Based Group Counseling (N = 136)	p value
Abnormal vaginal bleeding, n (%)	15 (11.0%)	13 (9.6%)	0.80
Pain at insertion site, n (%)	6 (4.4 %)	7 (5.1%)	0.83
Headache, n (%)	10 (7.3%)	9 (6.6%)	0.76
Stress, n (%)	5 (3.6%)	4 (2.9%)	0.70
Fatigue, n (%)	3 (2.2%)	4 (2.9%)	0.49
Weight loss, n (%)	7 (5.1%)	3 (2.2%)	0.11
Acne, n (%)	4 (2.9%)	3 (2.2%)	0.67
Increase weight, n (%)	6 (4.4%)	3 (2.2%)	0.18
Request son, n (%)	1 (0.07%)	0 (0.0%)	0.95

## Discussion

The results of this research indicated that both approaches to counseling enhanced use rate of

contraceptive implant. Likewise, the tendency of postpartum adolescents to use contraceptive implants was found to increase from 45% in 2014 to 78% in

2019 at Maharat Nakhon Ratchasima Hospital<sup>(4)</sup>. These findings confirmed the study of Korsch et al, which found that the process of disseminating information and the content had an influence on decision to use the contraceptive implant<sup>(11)</sup>.

After monitoring the continuation rate of contraceptive implants within 1 year of use, it was apparent that evidence of non-inferiority was noted comparing video-based group counseling with individual counseling. In addition, the results of this research suggested continue rate of contraceptive implants within 1 year of use was found to increase from 55% in 2016 in group counseling<sup>(5)</sup> to 65% in 2019 after developed video-based group counseling. Thus, the decision to continue the use of contraceptive implants lies on the basis of the acquisition of clear and complete information. These results were consistent with the study of Rubenstein et al, which found that an adequate and systematic provision of information with emphasis on the side effects of contraceptive implants led to a higher continuation rate<sup>(10)</sup>. According to the results of this research, side effects could be regarded as one of the factors that impacted the continuation rate of contraceptive implants<sup>(5,11,12)</sup>. In this research, there were no significant differences between the two groups in the aspect of side effects.

The limitation of this research was that the three-year continuation rates of contraceptive implant were examined within a limited time frame of 1 year. Hence, a three-year study should be conducted to obtain a more profound insight into the effectiveness of both counseling approaches. The decision of taking off contraceptive implant doesn't mean literally taking it off, so it is not a directly indicator for contraceptive implant compliant, but it is an indicator measuring compliant in many educational researches<sup>(5,8,10,11)</sup>.

## Conclusion

The research suggested that evidence of non-inferiority was noted comparing group counseling through the use of video with individual counseling through print media. Based on the results of this

research, video-based group counseling could effectively replace the traditional approach. Moreover, video can be shared with adolescent patients at prenatal clinics to raise awareness of the importance of birth control and ensure sufficient time to make an informed decision, hence enhancing the efficiency of the adolescent pregnancy prevention program.

## Potential conflicts of interest

The authors declare no conflicts of interest.

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