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Prevalence and Factors Associated with Long-acting Reversible Contraception Initiation in Non-teenage Postpartum Thai Women Attending Siriraj Hospital

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ABSTRACT

Objectives: To determine the prevalence of and factors significantly associated with long-acting reversible contraception (LARC) initiation among non-teenage postpartum women attending Siriraj Hospital.

Materials and Methods: This prospective cross-sectional study was conducted at Family Planning and Reproductive Health Unit during June 2021 to January 2022. Thai women aged 20-45 years who requested postpartum contraception within 8 weeks after delivery were eligible for study enrolment.

Results: Three hundred and seven postpartum women were included, but 3 women were excluded from analysis due to incomplete data. The mean age was 29.1 ± 5.6 years. Pregnancy complications were reported in 101 women (33.2%). The prevalence of postpartum LARC initiation was 27.6% (n = 84). The selected LARC method were, as follows: two-rod implant (11.8%), one-rod implant (10.9%), and intrauterine device (4.9%). Presence of pregnancy complications (adjusted odds ratio [aOR] 3.2, 95% confidence interval [CI] 1.21-8.44; p = 0.019) and interest in LARC (aOR 146.60, 95%CI 44.96-478.00; p < 0.001) were the factors independently associated with postpartum LARC initiation. Concern about the insertion procedure and complications or side effects related to LARC were cited as reasons for not requesting LARC initiation.

Conclusion: The prevalence of postpartum LARC initiation among non-teenage Thai women at our centre was higher than the national prevalence of LARC initiation in Thailand. Presence of pregnancy complications and interest in LARC were identified as independent predictors of postpartum LARC use. The barriers to LARC initiation should be evaluated and managed to increase the rate of LARC utilization among interested women, but who harbour concerns about LARC.

Keywords: intrauterine device, IUD, LARC, long-acting reversible contraceptive, postpartum, prevalence, subdermal implant contraceptive.

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ความชุกและปัจจัยที่มีความสัมพันธ์ต่อการเลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานของสตรีที่ไม่ใช่วัยรุ่นหลังคลอดบุตรที่โรงพยาบาลศิริราช

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บทคัดย่อ

วัตถุประสงค์*: เพื่อศึกษาความชุกและปัจจัยที่มีความสัมพันธ์ต่อการเลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานในสตรีที่ไม่ใช่วัยรุ่นในระยะหลังคลอดที่โรงพยาบาลศิริราช*

วัสดุและวิธีการ*: การศึกษาแบบ cross sectional study ศึกษาในสตรีไทยอายุ 20-45 ปีที่มารับบริการการคุมกำเนิดที่หน่วยวางแผนครอบครัวและอนามัยการเจริญพันธุ์ ในระยะเวลา 8 สัปดาห์หลังคลอด ตั้งแต่เดือนมิถุนายน พ.ศ. 2564 ถึง มกราคม พ.ศ. 2565*

ผลการศึกษา*: มีผู้เข้าร่วมการศึกษาทั้งหมด 307 คน คัดออกจากการวิเคราะห์ข้อมูล 3 คน เนื่องจากข้อมูลไม่สมบูรณ์ อายุเฉลี่ยของผู้เข้าร่วมวิจัยอยู่ในช่วง 29.1±5.6 ปี และผู้เข้าร่วมวิจัย 101 คน (ร้อยละ 33.2) มีภาวะแทรกซ้อนของการตั้งครรภ์ ร้อยละ 27.6 ของผู้เข้าร่วมวิจัย (84 คน) ใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นาน โดยมีผู้เลือกใช้ยาฝังคุมกำเนิดชนิด 2 หลอด ร้อยละ 11.8 ยาฝังคุมกำเนิดชนิด 1 หลอดร้อยละ 10.9 และห่วงคุมกำเนิดร้อยละ 4.9 การมีภาวะแทรกซ้อนของการตั้งครรภ์และมีความสนใจในการใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานเป็นปัจจัยที่ส่งผลต่อการเลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานในสตรีที่ไม่ใช่วัยรุ่นในระยะหลังคลอด เหตุผลของผู้เข้าร่วมวิจัยที่ไม่เลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานเนื่องจากมีความกังวลเกี่ยวกับกระบวนการฝังยาหรือใส่ห่วงคุมกำเนิด และมีความกังวลเกี่ยวกับภาวะแทรกซ้อนหรือผลข้างเคียงจากการใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นาน*

สรุป*: การเลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานของสตรีที่ไม่ใช่วัยรุ่นหลังคลอดที่โรงพยาบาลศิริราชสูงกว่าข้อมูลของประเทศไทย การมีภาวะแทรกซ้อนของการตั้งครรภ์และความสนใจในการใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานเป็นปัจจัยที่มีผลต่อการเลือกใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานอย่างมีนัยสำคัญทางสถิติ อุปสรรคที่มีผลต่อการใช้วิธีคุมกำเนิดชั่วคราวที่ออกฤทธิ์นานควรได้รับการประเมินและแก้ไขเพื่อที่จะช่วยเพิ่มอัตราการใช้ในสตรีที่สนใจใช้วิธีคุมกำเนิดวิธีนี้*

คำสำคัญ*: อุปกรณ์ช่วยพยุงมดลูก, ห่วงอนามัย, LARC, ยาคุมกำเนิดแบบย้อนกลับที่ออกฤทธิ์นาน, หลังคลอด, ความชุก, ยาคุมกำเนิดชนิดฝังใต้ผิวหนัง*

Introduction

Birth spacing or interpregnancy interval (IPI) is a potentially modifiable risk factor that is related to adverse pregnancy outcome[1]. Inappropriate IPI has negative effects on maternal health and increases the risk of adverse maternal, perinatal and infant outcomes[2-5]. The American College of Obstetricians and Gynaecologists (ACOG) recommends that women should be advised to avoid an IPI of less than 6 months, and should be counselled about the risks and benefits of repeat pregnancy sooner than 18 months[1]. To decrease the risk of adverse pregnancy outcomes, the World Health Organization (WHO) recommends at least a 24-month interval following a live birth prior to attempting conception for the next pregnancy[2].

According to the ACOG and WHO, long-acting reversible contraception (LARC) is defined as subdermal contraceptive implant, copper-containing intrauterine device (IUD) and levonorgestrel-releasing IUD[6,7]. LARC is considered to be a highly effective contraceptive method that has few contraindications, is user independent, and should be offered routinely as a contraceptive option for most women[6,8]. Family planning counselling and access to postpartum contraception are the effective strategies for optimizing IPI and preventing unintended pregnancy[1]. Despite the effort to improve contraceptive services, the rate of subdermal contraceptive implant and IUD use in Thailand in 2019 was reported to be only 1.6% and 0.4%, respectively[9].

Previous studies reported the prevalence of postpartum LARC use to vary widely from 5%-40.4% according to the study context[10-16]. The aforementioned studies differed in study design, participant characteristics (teenage and/or non-teenage women), timing of postpartum duration (immediate/delayed postpartum), and healthcare systems. Several factors associated with LARC utilization were identified, but those results also varied among studies. The reported associating factors included age, parity, occupation, education, previous LARC use, intention to use LARC, and type of medical insurance or health care coverage[10-17].

National healthcare policy in Thailand has recently changed from fully covering to not covering the cost of LARC in non-teenage women. Moreover, data specific to the prevalence of and factors associated with postpartum LARC initiation in non-teenage women at our centre, which is the university-based hospital in Thailand, are currently scarce. Accordingly, the aim of this study was to investigate the prevalence of and the factors significantly associated with LARC initiation among non-teenage postpartum Thai women attending Siriraj Hospital - Thailand's national tertiary referral centre. The information and data derived from this study will enhance our understanding of current use, behaviours, perceptions, and opinions relative to LARC, and this information will be used to facilitate improved use of and understanding about LARC among interested non-teenage postpartum women.

Materials and Methods

This cross-sectional study was conducted during June 2021 to January 2022 at the Family Planning and Reproductive Health Unit of the Department of Obstetrics and Gynaecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand. The protocol for this study was approved by the Siriraj Institutional Review Board (COA No. Si. 186/2021) and complied with the principles set forth in the 1964 Declaration of Helsinki and all of it subsequent amendments. Written informed consent was obtained from all included participants in the 6-8 weeks postpartum visit at the unit.

Thai women aged 20-45 years who requested postpartum contraception within 8 weeks after delivery were eligible for inclusion. Individuals

having one or more of the following were excluded: postpartum tubal sterilization or male partner with vasectomy, contraindication for IUD or implant contraception according to the medical eligibility criteria for contraceptive use published by the WHO[18], and/or neonatal death or stillbirth. In this study, LARC was defined as subdermal contraceptive implant or IUD.

According to our centre's standing postpartum follow-up protocol, postpartum women are scheduled to visit our unit 6-8 weeks after delivery for postpartum evaluation and family planning counselling. After both agreeing to participate and providing written inform consent, participants were interviewed to collect baseline information, obstetrics history, previous contraceptive use and interested contraceptive method. All study women received comprehensive counselling by a well-trained medical provider, such as obstetrics and gynaecological residents, registered nurses, or specialized counsellors in family planning - all under supervision of specialist medical staff. Counselling was provided following the standard practice and care provided by our unit, and focused on family planning, contraceptive methods, and the benefits and drawbacks of each method. After participants chose the contraceptive method, they were then interviewed to collect information regarding their reason for choosing that contraception method. Delivery outcomes were extracted from medical and labour records. All women who chosen LARC method received LARC insertion on the postpartum visit day.

Statistical analysis

Data analyses were performed using PASW Statistics version 23.0 for Windows (SPSS, Inc., Chicago, IL, USA). Patient demographic and clinical data were summarized using descriptive statistics. Chi square test and Student's t-test was used to compare categorical data and normally distributed continuous data between groups, respectively. Data were presented as number (n) and percentage (%) for categorical data, and as mean ± standard deviation (SD) for normally distributed continuous data. Univariable analysis was carried out to identify variables potentially associated with the LARC use. Variables with a p value of less than 0.2 from univariate analysis were included in multiple logistic regression analysis to identify factors independently associated with LARC initiation. A p value less than 0.05 was considered to be statistically significant.

Results

Three hundred and seven postpartum women were initially enrolled in this study. Of those, 3 women were excluded from the analysis due to having incomplete data. The baseline demographic and clinical characteristics of 304 women are shown in Table 1. The mean age was 29.1 ± 5.6 years (range: 19 - 44), and the mean body mass index (BMI) was 25.5 ± 4.9 kg/m^2 (range: 15.0 - 46.4). Pregnancy complications, such as pregnancy-induced hypertension, gestational diabetes, etc, occurred in 101 (33.2%) women. Of the 304 participants, 263 women reported prior use of any contraceptive method before the index pregnancy, including combined oral contraceptive (COC) (n = 142, 54%), condom (n = 74, 28.1%), depot medroxyprogesterone acetate (DMPA) (n = 56, 21.3%), contraceptive implant (n = 15, 5.7%) and IUD (n = 2, 0.8%). Approximately 69.4% of women reported an intention of > 2 years of IPI, and 32.6% of participants reported having an interest in LARC use.

Table 1. Patient baseline demographic and clinical characteristics (n = 304).

Characteristics	mean ± SD or n (%)
Age (years)	29.1 ± 5.6
20 - 30	181 (59.5)
31 - 40	120 (39.5)
≥ 41	3 (1.0)
Body mass index (kg/m^2)	25.5 ± 4.9
< 18.5	13 (4.3)
18.5 - 24.9	142 (46.7)
25 - 29.9	99 (32.6)
≥ 30	50 (16.4)
Education	
Primary School	12 (3.9)
High school	118 (38.8)
Bachelor's degree or higher	174 (57.3)
Marital status	
Married	292 (96.0)
Single	9 (3.0)
Divorced	3 (1.0)
Occupation	
Housewife/unemployed	72 (23.7)
Student	5 (1.6)
Employee	165 (54.3)
Government officer	21 (6.9)
Private business owner	41 (13.5)
Income (Thai baht/month)	
< 10,000	28 (9.2)
10,001 - 50,000	228 (75.0)
> 50,000	48 (15.8)
Adequacy of income	
Adequate	245 (80.6)
Inadequate	59 (19.4)
Parity	
1	172 (56.6)
2	93 (30.6)
≥ 3	39 (12.8)
Gestational age at delivery (weeks)	
< 37	31 (10.2)
≥ 37	273 (89.8)
Route of delivery	
Cesarean section	89 (29.3)
Vaginal delivery	215 (70.7)
First ANC	
1st trimester	227 (74.7)
After 1st trimester	77 (25.3)

Table 1. Patient baseline demographic and clinical characteristics (n = 304). (Cont.)

Characteristics	mean ± SD or n (%)
Presence of pregnancy complications**	101 (33.2)
gestational diabetes	35 (11.5)
pregnancy-induced hypertension	47 (15.5)
fetal growth restriction	22 (7.2)
Others*	10 (3.3)
Any prior contraceptive use before index pregnancy***	263 (86.5)
combined oral contraceptive	142 (46.7)
condom	74 (24.3)
depot medroxyprogesterone acetate	56 (18.4)
contraceptive implant	15 (4.9)
IUD	2 (0.7)
Intended interpregnancy interval (years)	
≤ 2	93 (30.6)
> 2	211 (69.4)
Interested in LARC	99 (32.6)
Currently breast feeding	297 (97.7)

SD: standard deviation, ANC: antenatal care, LARC: long-acting reversible contraception
* Others: postpartum haemorrhage, placenta previa, abruptio placenta
**presence of more than one pregnancy complication in some women
*** prior contraceptive use of more than one method in some women

The distribution of postpartum contraception initiation is shown in Fig. 1. The prevalence of postpartum LARC initiation was 27.6% (n = 84). The selected LARC methods included two-rod implant (11.8%), one-rod implant (10.9%), and copper-containing IUD (4.9%). The factors found to be significantly associated with postpartum LARC initiation are shown in Table 2. Multivariate analysis revealed presence of pregnancy complications (adjusted odds ratio [aOR] 3.2, 95% confidence interval [CI] 1.21 - 8.44; p = 0.019) and interest in LARC (aOR 146.60, 95%CI 44.96 - 478.00; p < 0.001) to be factors independently associated with postpartum LARC initiation (Table 3).

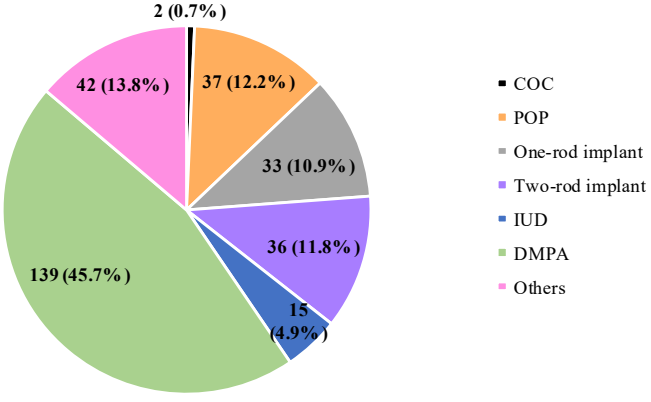

Fig. 1. The distribution of postpartum contraception initiation (n = 304).
(COC: combined oral contraceptive, POP: progestin-only pill, IUD: intrauterine device, DMPA: depot medroxyprogesterone acetate). Others: condom, withdrawal method, no method use

Table 2. Patient baseline demographic and clinical characteristics compared between those choosing for and against LARC initiation (n = 304).

Characteristics	LARC (n = 84) mean ± SD or n (%)	Non-LARC (n = 220) mean ± SD or n (%)	p value
Age (years)	27.3 ± 5.5	29.8 ± 5.2	0.001
20 - 30	60 (71.4)	121 (55.0)	0.029
31 - 40	23 (27.4)	97 (44.1)	
≥ 41	1 (1.2)	2 (0.9)	
Body mass index (kg/m^2)	26.01 ± 5.25	25.25 ± 4.69	0.219
< 18.5	2 (2.4)	11 (5.0)	0.541
18.5 - 24.9	36 (42.9)	106 (48.2)	
25 - 29.9	31 (36.9)	68 (30.9)	
≥ 30	15 (17.9)	35 (15.9)	
Education			0.296
Primary School	2 (2.4)	10 (4.5)	
High school	38 (45.2)	80 (36.4)	
Bachelor's degree or higher	44 (52.4)	130 (59.1)	
Marital status			0.159
Married	78 (92.9)	214 (97.3)	
Single	4 (4.8)	5 (2.3)	
Divorced	2 (2.4)	1 (0.5)	
Occupation			0.072
Housewife/unemployed	23 (27.4)	49 (22.3)	
Student	4 (4.8)	1 (0.5)	
Employee	42 (50.0)	123 (55.9)	
Government officer	6 (7.1)	15 (6.8)	
Private business owner	9 (10.7)	32 (14.5)	
Income (Thai baht/month)			0.021
< 10,000	14 (16.7)	14 (6.4)	
10,001 - 50,000	58 (69)	170 (77.3)	
> 50,000	12 (14.3)	36 (16.4)	
Adequacy of income			0.128
Adequate	63 (75)	182 (82.7)	
Inadequate	21 (25)	38 (17.3)	
Parity			0.057
1	43 (51.2)	129 (58.6)	
2	24 (28.6)	69 (31.4)	
≥ 3	17 (20.2)	22 (10)	
Gestational age at delivery (weeks)			0.543
< 37	10 (11.9)	21 (9.5)	
≥ 37	74 (88.1)	199 (90.5)	
Route of delivery			0.337
Cesarean section	28 (33.3)	61 (27.7)	
Vaginal delivery	56 (66.7)	159 (72.3)	
Presence of pregnancy complications			0.166
No	51 (60.7)	152 (69.1)	
Yes	33 (39.3)	68 (30.9)	
First ANC			0.164
1st trimester	58 (69.0)	169 (76.8)	
after 1st trimester	26 (31.0)	51 (23.2)	

Table 2. Patient baseline demographic and clinical characteristics compared between those choosing for and against LARC initiation (n = 304). (Cont.)

Characteristics	LARC (n = 84) mean ± SD or n (%)	Non-LARC (n = 220) mean ± SD or n (%)	p value
Any prior contraceptive use before index pregnancy			0.104
No	7 (8.3)	34 (15.5)	
Yes	77 (91.7)	186 (84.5)	
Prior LARC use before index pregnancy			0.003
No	74 (88.1)	213 (96.8)	
Yes	10 (11.9)	7 (3.2)	
Intended interpregnancy interval (years)			< 0.001
≤ 2	6 (7.1)	87 (39.5)	
> 2	78 (92.9)	133 (60.5)	
Interested in LARC			< 0.001
No	7 (8.3)	198 (90)	
Yes	77 (91.7)	22 (10)	
Currently breast feeding			0.077
No	4 (4.8)	3 (1.4)	
Yes	80 (95.2)	217 (98.6)	

LARC: long-acting reversible contraception, SD: standard deviation, ANC: antenatal care

Table 3. Univariate and multivariate analysis for factors independently associated with postpartum LARC initiation.

	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p value
Age ≥ 30 years	0.51 (0.30-0.86)	0.011	1.70 (0.63-4.60)	0.299
Married	0.36 (0.11-1.16)	0.077	0.46 (0.06-3.45)	0.446
Employee, government officer or business owner	0.62 (0.36-1.08)	0.091	0.62 (0.22-1.74)	0.362
Income > 10,000 THB/month	0.34 0.15-0.75)	0.005	0.24 (0.05-1.13)	0.072
Inadequate income	1.60 (0.87-2.92)	0.128	0.66 (0.22-1.99)	0.462
Parity > 2	2.28 (1.14-4.56)	0.017	0.95 (0.30-3.15)	0.939
First ANC after 1st trimester	1.49 (0.85-2.60)	0.164	1.73 (0.63-4.75)	0.286
Presence of pregnancy complications	1.45 (0.86-2.44)	0.166	3.20 (1.21-8.44)	0.019
Any prior contraceptive use before index pregnancy	2.01 (0.85-4.73)	0.104	1.13 (0.27-4.71)	0.866
Prior LARC use before index pregnancy	4.11 (1.51-1.19)	0.003	1.40 (0.30-6.47)	0.666
Currently breastfeeding	0.28 (0.06-1.26)	0.077	2.23 (0.21-24.00)	0.510
Intended interpregnancy interval > 2 years	8.50 (3.55-20.36)	< 0.001	1.10 (0.98-4.07)	0.885
Interested in LARC	99.0 (40.64-241.16)	< 0.001	146.60 (44.96-478.00)	< 0.001

LARC: long-acting reversible contraception, OR: odds ratio, CI: confidence interval, THB: Thai baht, ANC: antenatal care

The reasons given for and against postpartum LARC initiation are listed in Table 4. Convenience, no effect on breastfeeding and good contraceptive efficacy were the most common reasons given among those who chose contraceptive implant, whereas no desire to have more children and health care suggestion were the most common reasons given among those who chose IUD. Concern about complications or side effects related to LARC, such as irregular bleeding, weight gain, and IUD displacement, and the insertion procedure were given as reasons for deciding against LARC use.

There were 22 women who initially expressed interested in LARC, but subsequently decided against LARC. The most commonly given reasons for ultimately deciding against LARC were financial

problem (36.4%), concern about the insertion procedure (31.8%) and concern about complication or side effect of LARC (27.3%) such as irregular bleeding and IUD displacement.

Table 4. Reasons given for and against postpartum LARC initiation.

Reasons for contraceptive implant use (n = 69)	n (%)
No desire to have more children	25 (36.2)
Desire for ≥ 2-year interpregnancy interval	30 (43.5)
Good contraceptive efficacy	43 (62.3)
Long contraceptive duration	42 (60.9)
Easy to use/convenient	55 (79.7)
No effect on breastfeeding	46 (66.7)
Healthcare suggestion	17 (24.6)
Few complications/side effects	8 (11.6)
Health insurance coverage	9 (13.0)
Other	2 (2.9)
Reasons for intrauterine device use (n = 15)	
No desire to have more children	9 (60)
Desire for ≥ 2-year interpregnancy interval	2 (13.3)
Good contraceptive efficacy	5 (33.3)
Long contraceptive duration	6 (40)
Easy to use/convenient	8 (53.3)
No effect on breastfeeding	6 (40)
Healthcare suggestion	9 (60)
Non-hormonal method	6 (40)
Few complications/side effects	4 (26.7)
Health insurance coverage	3 (20)
Reason for non-LARC use (n = 220)	
Unacceptable side effect(s) from previous LARC use	19 (8.6)
Desire for < 2-year interpregnancy interval	70 (31.8)
Concern about complication or side effect of LARC	190 (86.4)
Concern about LARC insertion procedure	107 (48.6)
No health insurance coverage	24 (10.9)

LARC: long-acting reversible contraception

Discussion

Family planning counselling and postpartum contraception are essential components of postpartum care that help to prevent unintended pregnancy and to facilitate appropriate birth spacing. LARC is a highly effective reversible method of contraception that yields several important benefits. However, the utilization rate of LARC in Thailand was reported to be low[9]. The present study was conducted in a tertiary university-based hospital setting that provides family planning counselling and contraception services that are provided by professional healthcare team. The prevalence of LARC initiation in non-teenage women within 8 weeks after their delivery was 27.6%, 22.7% and 4.9% chose contraceptive implant and copper-containing IUD, respectively. We found presence of pregnancy complications and interest in LARC use to be independent predictors of postpartum LARC initiation.

The reported prevalence of postpartum LARC use varied among studies. Our study found a 27.6% prevalence of postpartum LARC initiation. Previous studies conducted in Thailand reported a prevalence of LARC use in postpartum women that ranged from 0.8% - 15.8%[10,11,17,19], while other studies that were conducted in different countries/regions described a

prevalence of postpartum LARC initiation of 9.9% - 36.5%[12-16]. Possible reasons that may explain the difference in prevalence between our study and others included differences in the study design and setting such as hospital-based versus community-based setting; different healthcare systems; diverse socioeconomic status and patient characteristic included in the studies, such as nulliparous or primiparous women[11,17] or adolescent women[10,13-17], and differences in the postpartum period duration[10,13-16].

In this study, most of the women who selected LARC preferred contraceptive implant over IUD, which was similarly reported in previous studies[10-12,14,16] and the Thai national data[9]. However, and in contrast, some studies reported a predominance of IUD use compared to implant[13,15]. These differences between and among studies could be due to difference in duration between methods; concern about the insertion procedure; concern about side effect, such as IUD displacement and bleeding irregularity; differences in beliefs and culture; and differences in national contraceptive use policy.

Identifying the factors that significantly associated with a decision to accept and use LARC is one of the important steps toward optimizing individual contraception use. In the present study, there were two factors that were identified as being independently associated with LARC initiation - presence of pregnancy complications and patient interest in LARC. Women with pregnancy complication were about three times more likely to use LARC compared with their counterparts. The possible reason may be increased awareness of and concern about their health. We also found patient interest in LARC to be an independent predictor of postpartum LARC initiation. This factor was also significantly related to postpartum LARC use in other study[10]. Previous studies identified other factors as being independently associated with postpartum LARC initiation, younger age[13,14,17], being married[14], multiparous women[13,15], lower education level[17], occupation[10,11,16], vaginal delivery in the index pregnancy[15], previous LARC use[12], receiving family planning counselling[12,14,16] and insurance or healthcare coverage[10,13]. This variation in significant factors among studies may be due to differences in study design, setting and patient characteristics. Moreover, some of these previous studies defined DMPA as LARC, which could adversely influence the process of analysing for factors related to LARC use[10,11,17].

The reasons among our cohort for deciding to use contraceptive implant included convenience, not adversely effect on breastfeeding, good contraceptive efficacy, and the reasons for individual who decided to use IUD were complete childbearing and health care suggestion. These mentioned reasons were consistent with previous studies[10,11]. Interestingly, the study women who refused to use LARC or who changed their mind after demonstrating initial interest in LARC expressed concern about complications or side effects related to LARC, the insertion procedure or financial problem. Previous studies reported reason for denying LARC despite showing initial interest that included not currently having sexual intercourse[10] and fear of side effects[12]. Cost was also mentioned as a barrier to using LARC in previous studies[10,20-22].

Since LARC is the most effective reversible contraceptive method, delivery of effective contraceptive counselling and education about LARC should be incorporated into the antenatal and postpartum counselling program to draw attention to and increase interest in LARC. Emphasizing the advantages of LARC and anticipatory counselling about the safety of the insertion procedure and side effects of LARC (mostly minor side effects) could promote both contraceptive implant and IUD use. Future study of effective interventions for promoting LARC acceptance and to assess patient knowledge and attitude towards LARC is warranted. The cost of LARC also appears to be a barrier that limits its use. Individuals should have access to all contraceptive methods, including LARC, when needed with no cost-related barrier that prevents such access. National healthcare policy should be amended to cover these costs for all women, including non-teenagers, in order

to enhance LARC uptake, which will help to reduce unplanned pregnancy and to optimize IPI.

The aim of this study was to investigate postpartum LARC use and associated factors among non-teenage Thai women. We excluded adolescents because they have different characteristics and needs that require special attention to prevent unplanned pregnancy. These differences between teenage and non-teenage women would, therefore, require different counselling processes to educate postpartum women about the important benefits of postpartum contraception. In addition, we did not include DMPA as LARC. Therefore, prevalence, factors, and the reasons related to postpartum LARC initiation in this study are specific to subdermal contraceptive implant use or IUD use, which are the two contraceptive methods defined as LARC by the WHO and ACOG. Compared to DMPA, contraceptive implant and IUD have different properties that confer a longer duration of action, have a higher cost and require an insertion procedure. Additionally, healthcare policy specific to LARC in Thailand has been changed from free-of-charge to all age groups to free-of-charge for only adolescents since November 2021. This factor may have influenced the prevalence of factors associated with, and the reasons for and against postpartum LARC uptake in our study.

This study has some mentionable limitations. First, this study was a cross-sectional hospital-based study that was conducted in a tertiary university hospital setting, so our results may not be generalizable to other care settings. Second, we did not evaluate our patients' attitude toward LARC, their knowledge about LARC, or their partners' sociodemographic characteristics - all of which could influence the decision to use or not use LARC. Furthermore, this study was conducted during the COVID-19 pandemic, which may have to some degree prevented our patients from receiving appropriate contraceptive services; however, our unit focuses specific attention providing comprehensive contraceptive service to postpartum women before their discharge from the hospital.

Conclusion

The prevalence of postpartum LARC initiation among non-teenage Thai women at our centre was higher than the national prevalence of LARC initiation in Thailand. Presence of pregnancy complications and interest in LARC were identified as independent predictors of postpartum LARC use. The barriers to LARC initiation should be evaluated and managed to increase the rate of LARC utilization among interested women, but who harbour concerns about LARC.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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