

Contraceptive Knowledge and Contraceptive Self-Efficacy of Thai Adolescent Mothers

Tareewan Chaiboonruang

A dissertation

Submitted in partial fulfillment of the  
requirements for the degree of

Doctor of Philosophy

University of Washington

2018

Reading Committee:

Karen G. Schepp, Chair

Sarah Odell Gimbel-Sherr

Ira Kantrowitz-Gordon

Program Authorized to Offer Degree:

Nursing

©Copyright 2018

Tareewan Chaiboonruang

University of Washington

**Abstract**

Contraceptive Knowledge and Contraceptive Self-Efficacy of Thai Adolescent Mothers

Tareewan Chaiboonruang

Chair of the Supervisory Committee:

Karen G. Schepp

School of Nursing

Pregnancy in adolescence is a reproductive health service challenge. The purpose of this mixed methods study was to assess the relationship between contraceptive knowledge and contraceptive self-efficacy of 160 Thai adolescent postpartum mothers and to explore their perceptions, feelings, attitudes, and experiences regarding contraception. The primary method was a quantitative approach. The secondary method was a qualitative approach. Data gathered from a quantitative method were analyzed by using descriptive statistics and multiple linear regression. Qualitative data were analyzed by using a deductive content analysis technique. The findings showed that the levels of contraceptive knowledge and contraceptive self-efficacy of participants were fair. There was a positive relationship between contraceptive knowledge and contraceptive self-efficacy. Support from partners, relatives, and healthcare providers promoted contraceptive knowledge. Fear of adverse effects of contraceptive methods lowered contraceptive self-efficacy. Perceiving uncertain life situations altered the use of contraception. The findings help to guide the national maternal and child health policy and development of educational programs for reducing repeat pregnancy rates among adolescent mothers.

## TABLE OF CONTENTS

	Page
List of Figures.....	ii
List of Tables.....	iii
Acknowledgements.....	iv
Introduction of Contraceptive Knowledge and Contraceptive Self-Efficacy of Thai Adolescent Mothers.....	1
Paper 1: Characteristics, Contraceptive Knowledge, and Contraceptive Self-Efficacy of Thai Adolescent Mothers.....	13
Paper 2: Correlates of Thai Adolescent Mothers' Characteristics, Contraceptive Knowledge, and Contraceptive Self-Efficacy.....	37
Paper 3: Exploring Contraceptive Knowledge and Contraceptive Self-Efficacy among Thai Adolescent Mothers.....	64

## LIST OF FIGURES

	Page
Figure 2.1 Conceptual Framework of Personal Agency and Contraceptive Self-Efficacy Belief.....	39

## LIST OF TABLES

Number		Page
1.1	Demographics, Socioeconomic and Reproductive Characteristics.....	19
1.2	Contraceptive Knowledge.....	21
1.3	Contraceptive Self-Efficacy.....	23
2.1	Demographics, Socioeconomic and Reproductive Characteristics.....	46
2.2	Descriptive and Zero-Order Correlations of Contraceptive Self-Efficacy and Contraceptive Knowledge with Selected Socio-Demographic Characteristics among a Sample of 160 Adolescent Postpartum Mothers Aged 15 – 19.....	48
2.3	Model Results for Contraceptive Self-Efficacy.....	50
2.4	Model Results for Contraceptive Knowledge.....	52
3.1	Interview Guide for Qualitative Approach.....	69
3.2	Coding Frame of a Deductive Content Analysis.....	70

## **ACKNOWLEDGEMENTS**

This study is part of a doctoral dissertation in Nursing Science at the School of Nursing, University of Washington, USA. I would like to thank my supervisory committee members, Professor Dr. Karen G. Schepp, Professor Dr. Grace C. John-Stewart, Associate Professor Dr. Sarah Odell Gimbel-Sherr, and Assistant Professor Dr. Ira Kantrowitz-Gordon. This project received financial support from the Hester McLaws Scholarship. The researcher acknowledges the assistance of staff nurses caring for adolescent postpartum mothers at 5 hospitals in Chiang Mai Province, Thailand.

## **Introduction of Contraceptive Knowledge and Contraceptive Self-Efficacy of Thai Adolescent Mothers**

Pregnancy in adolescence increases risks of maternal and fetal morbidity and mortality. A girl and her family may face negative social and economic effects, such as leaving home, dropping out of school, unsafe abortion, and unemployment (World Health Organization, 2016). Several studies showed that women's age, educational level, family formation, marital status, number of children, contraceptive information, and a distance from health centers had significant relationships with contraceptive knowledge (CK) and contraceptive self-efficacy (CSE) (Chaovitsaree, Noi-um, & Kietpeerakool, 2012; Edmeades, 2008; Ip et al., 2009; Juisitthipraphai, Nirattharadorn, & Suwannarurk, 2015).

This study limited the participants to postpartum adolescents who are Thai. Non-Thai adolescents (immigrants and hill tribes) may have different cultures, beliefs, and learning experiences about contraception. CK is defined as individual's knowledge of reproductive-related anatomy and physiology, effectiveness and usage of contraceptives, and signs of pregnancy (Ip, Sin, & Chan, 2009). CSE is an individual's belief in one's capability to use contraceptive methods and to control sexual situations (Bandura, 1986). CSE belief of adolescents is formed through their socio-demographic characteristics and it requires CK and skill to motivate and guide their' efforts, as well as the expertise and resources to support the actions (Bandura, 2006).

The study aimed to assess the relationship between CK and CSE of Thai adolescent postpartum mothers and to explore their perceptions, feelings, attitudes, and experiences regarding contraception. The specific aims of the study were to:

1. Describe CK and CSE of Thai adolescent postpartum mothers at 5 hospital-based wards in Chiang Mai Province, Thailand.

Hypothesis 1.1: Thai adolescent postpartum mothers have low levels of CK, determined by the mean score that is below 15 (developed based on Ip et al. (2009)) out of 26 from the contraceptive knowledge test (CKT).

1.2: Thai adolescent postpartum mothers have low levels of CSE determined by the mean score that is below 56 (Ip et al., 2009) out of 90 from the contraceptive self-efficacy scale (CSES).

2. Assess the relationships of socio-demographic characteristics with CK and CSE of Thai adolescent postpartum mothers at 5 hospital-based wards in Chiang Mai Province, Thailand.

Hypothesis 2.1: There are statistically significant positive relationships between CK and older age, high educational level, family status, marital status, number of children, attending contraceptive class, as well as a statistically significant negative relationship between CK and a greater distance from the hospital.

2.2: Age, educational level, family status, marital status, number of children, attending contraceptive class, and distance from home to the hospital predict CK.

2.3: There are statistically significant positive relationships between CSE and older age, high educational level, family status, marital status, number of children, attending contraceptive class, as well as a statistically significant negative relationship between CSE and a greater distance from the hospital.

2.4: Age, educational level, family status, marital status, number of children, attending contraceptive class, and distance from home to the hospital predict CSE.

3. Assess the relationship between CSE and CK of Thai adolescent postpartum mothers at 5 hospital-based wards in Chiang Mai Province, Thailand.

Hypothesis 3.1: There is a statistically significant positive relationship between CSE and CK.

4. Explore Thai adolescent mothers' perceptions, feelings, attitudes, and experiences regarding contraception.

For the specific aim 4, the researcher expected that information from a qualitative approach helps to provide more detail about the mothers' perceptions, thoughts, and feelings about using contraceptives and this expands the results derived from a quantitative method.

The institutional review boards at the University of Washington and the Faculty of Medicine, Chiang Mai University approved the study.

### **Research Strategy**

#### **Significance**

The prevalence of repeat adolescent pregnancy is one of the indicators of a reproductive health service challenge because it may imply insufficiency of educating adolescent mothers to start using a birth control method immediately after birth (United Nations Population Fund Thailand Country Office, 2014). Pregnancy in adolescents may cause maternal anemia, cephalopelvic disproportion, cesarean sections, operative delivery, and postpartum complications. Meanwhile, an infant is more likely to be at risk of low birth weight, structural congenital abnormalities, still birth, and neonatal death (Areemit et al., 2012; Chantrapanichkul & Chawanpaiboon, 2013; Thaithae & Thato, 2011).

A study in Thailand found that mothers aged 15 to 19 years were 2.6 times more likely to have low birth weight newborn than mothers aged 20 to 34 years (Thongto, 2011). Adolescent

mothers may be stigmatized for repeating grades and dropping out of school. They may be exposed to unsafe abortion and physical or verbal abuse. Many of them had to take care of their babies in the absence of adolescent fathers, and decreased earning potential (Dallas, 2013). Jeng (2012) found that 23.8% of Thai pregnant women who chose abortion rather than bearing a child were aged 15-19 years. Findings from another study indicated that within 2.5 years after deliveries, most adolescents tended to end the relationship with partners, depended on their parents, had not finished high school, and were unsatisfied with their income and occupation (Zeck, Bjelic-Radisic, Haas, & Greimel, 2007).

Adolescent repeat pregnancy rates in Thailand are increasing. Between 2010 and 2016, the rates increased from 11.3% to 12.2%. In Chiang Mai, the rates were 12.6% and 18.2% in 2016 and 2017, respectively (Chiang Mai Provincial Health Office, 2018). These numbers were higher than the national target rate of less than 10% for repeat pregnancy in adolescence (Chiang Mai Provincial Health Office, 2018).

The problem of adolescent repeat pregnancy partially resulted from insufficient contraceptive knowledge and ineffective contraceptive use among adolescent mothers (Wilson, Samandari, Koo, & Tucker, 2011). In Thai cultural context, using a condom demonstrates a mistrust among partners (Khumsaen & Gary, 2009). Findings of a study in Chiang Mai Province indicated that 35.6% of pregnant women aged 15-24 years did not use any contraception method at the time of conception because most of them were concerned with the adverse effects and the safety of contraceptives (Sriprasert, Chaovisitsaree, Sribanditmongkhon, Sunthornlimsiri, & Kietpeerakool, 2015). Furthermore, 14% of postpartum women had vaginal sexual intercourse before attending the 6-week postpartum clinic checkup where family planning practices and choices of contraception are discussed (Chaovisitsaree et al., 2012). The delay in receiving

information about contraception and using contraception can cause a rapid repeat pregnancy (defined as less than 24 months after index birth or between previous delivery date and next conception) (Lemay, Cashman, Elfenbein, & Felice, 2007).

The Thailand Ministry of Public Health recommends that adolescent mothers should space their pregnancies by at least two years, or until they are 20 years old, which is consistent with the World Health Organization and the United Nations Population Fund (United Nations Population Fund Thailand Country Office, 2014).

The results of this study help to inform the national maternal and child health policy and guide the development of intervention programs for reducing repeat pregnancy rates, while considering culture, norms and influential factors of mothers and their families.

### **Innovation**

Most studies conducted in Thailand focused on side effects of specific contraceptive methods among adolescents in school, pregnant women, and postpartum women in a wide range of age (Chaiyasit & Taneepanichskul, 2010; Chaovisitsaree et al., 2012; Nanda et al., 2011; Piyasirisilp & Taneepanichskul, 2008; Pongsatha, Ekmahachai, Chaovisitsaree, Suntornlimsiri, & Morakote, 2009). The work focusing on knowledge and self-efficacy in contraception among adolescent postpartum mothers in Thailand was limited.

This study was informed by the Social Cognitive Theory (SCT), which has self-efficacy as its core component (Schunk & Meece, 2006). A concept of personal agency and its relation to CSE are the main interests of this study. Self-efficacy is a key resource of self-development, successful adaptation, and change, which affect personal capabilities (Bandura, 2006). A person with high self-efficacy will seek well-being and desired outcomes through 3 modes of personal agency: individual, proxy, and collective agencies (Bandura, 2006). Individual agency is linked

to a person's biological changes, socio-demographic characteristics, family status, and social roles. Proxy agency refers to the contraceptive expert or another person who can act on behalf of the individual. Collective agency includes contraceptive knowledge, skills, and resources. This was the first study to assess CK and CSE of Thai adolescent postpartum mothers, by focusing on CSE and its link to some elements of a personal agency as informed by the SCT.

### **Approach**

**Overview and settings.** This study was a mixed methods design. The primary method was a quantitative cross-sectional approach and the secondary method was a qualitative approach. The study was conducted between September 2017 and January 2018 with 160 Thai adolescent postpartum mothers from 5 hospitals in Chiang Mai Province, Thailand.

In a quantitative approach, the researcher asked the participants to tell their responses and the researcher recorded the data. The data collection session took about 45 minutes to complete the questionnaires. In a qualitative approach, the researcher conducted a semistructured interview with 10 participants who agreed to participate in an additional in depth interview. The interviews were audio-recorded to reassure accuracy of the interview data. Each interview was conducted face-to-face in a private room and took about 40 minutes to complete.

Prior to the study, a small pilot study of approximately 10 participants was conducted to determine if the measures were clearly worded and understandable to the participants. Cronbach's alpha coefficient of the CSES was 0.80 which was acceptable for this study (Devellis, 2012). Construct validity showed a positive correlation between CK and CSE, indicating that as knowledge increases so does self-efficacy.

**Sample.** Participants were recruited using a convenience method (Polit & Beck, 2012). More details about the sample are in other papers.

**Recruitment and enrollment.** Adolescent postpartum mothers who met the criteria were invited to participate in the study, given a form letter explaining the purpose of the study, informed of ethical issues of the study, and given assurance of privacy and confidentiality. The researcher followed the principle of respect of person, beneficence, risk, and justice (Creswell, 2014; U.S. Department of Health, Education, and Welfare, 1979). The participants were asked to sign a consent and assent form based on their age. One copy was provided to the participant and another one was kept by the researcher.

**Measures.** Before using the tool, four experts were invited to the panel to make professional judgments whether the sampled items well represented the domains of CK and CSE. The measures were translated from English, back translated, and reviewed by a committee of three bilingual experts (Waltz, Strickland, & Lenz, 2010).

Quantitative data were obtained by administering the 26 - item contraceptive knowledge test (CKT), and the 18 - item contraceptive self-efficacy scale (CSES). A socio-demographic data form was used to obtain information about age, educational level, and other demographic and characteristic variables.

Qualitative data were collected by using a semistructured open-ended interview to obtain adolescent postpartum mothers' attitudes, perceptions, feelings, and experiences regarding contraception. Member checking was conducted during the interviews and interpretation process. The researcher asked the participants to confirm the transcriptions and conclusion of the findings. An audit trail was kept as the main themes in the data and identified by the researcher and other two investigators. These efforts will help to ensure credibility of the data and the findings (Mays & Pope, 1995; Tashakkori & Teddlie, 1998).

**Analysis.** Quantitative data were analyzed by using SPSS for Windows version 22.

Aim 1. Frequency, means, percentage, and standard deviations were used to describe CK, and CSE.

Aim 2. Multiple linear regression analysis was used to assess the relationships of socio-demographic characteristics associated with CK and CSE.

Aim 3. Multiple linear regression analysis was used to assess the relationship between CSE and CK.

Aim 4. A deductive content analysis technique was used to analyze the qualitative data.

### **Results**

The results for Aim 1 were in the Paper titled “Characteristics, Contraceptive Knowledge, and Contraceptive Self-Efficacy of Thai Adolescent Mothers.” Aim 2 and 3 were addressed in the Paper titled “Correlates of Thai Adolescent Mothers’ Characteristics, Contraceptive Knowledge, and Contraceptive Self-Efficacy.” And Aim 4 was illustrated in the Paper titled “Exploring Contraceptive Knowledge and Contraceptive Self-Efficacy among Thai Adolescent Mothers.”

### **Limitations**

A mixed methods study of quantitative and qualitative approaches could not allow for generalization to others populations. The study focused only on some elements in personal factors influencing CSE. A deductive content analysis method based on the conceptual framework provided biased results. Postpartum fatigue of the participants and concerns of newborn care influenced their responses to the interview.

### References

- Areemit, R., Thinkhamrop, J., Kosuwon, P., Kiatchoosakun, P., Sutra, S., & Thepsuthammarat, K. (2012). Adolescent pregnancy: Thailand's national agenda. *Journal of the Medical Association of Thailand, 95 Suppl 7*, S134-142.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, Connecticut: Information Age Publishing.
- Bandura, A. (1986). *Social foundations of thought and action*. New Jersey: Prentice-Hall.
- Chaiyasit, N., & Taneepanichskul, S. (2010). A study of cycle control, side effects and client's satisfaction of a low dose combined contraceptive containing ethinylestradiol/drospirenone (24/4 regimen). *Journal of the Medical Association of Thailand, 93(5)*, 517-522.
- Chantrapanichkul, P., & Chawanpaiboon, S. (2013). Adverse pregnancy outcomes in cases involving extremely young maternal age. *International Journal of Gynaecology and Obstetrics, 120(2)*, 160-164. doi:10.1016/j.ijgo. 2012.08.024
- Chaovisitsaree, S., Noi-um, S., & Kietpeerakool, C. (2012). Review of postpartum contraceptive practices at Chiang Mai University Hospital: Implications for improving quality of service. *Medical Principles and Practice, 21(2)*, 145-149. doi:10.1159/000333557
- Chiang Mai Provincial Health Office. (2018). *Provincial inspeculate report 2018*. Chiang Mai, Thailand: Health Promotion Group.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4<sup>th</sup> ed.). Thousand Oaks, CA: SAGE.

- Dallas, C. M. (2013). Rapid repeat pregnancy among unmarried, African American adolescent parent couples. *Western Journal of Nursing Research, 35*(2), 177-192. doi:10.1177/0193945912463268
- DeVellis, R. F. (2012). *Scale development: Theory and applications* (3<sup>rd</sup> ed.). Los Angeles: SAGE.
- Edmeades, J. (2008). The legacies of context: Past and present influences on contraceptive choice in Nang Rong, Thailand. *Demography, 45*(2), 283-302.
- Ip, W. Y., Sin, L. L., & Chan, D. S. (2009). Contraceptive self-efficacy and contraceptive knowledge of Hong Kong Chinese women with unplanned pregnancy. *Journal of Clinical Nursing, 18*(17), 2416-2425. doi:10.1111/j.1365-2702.2009.02829.x
- Jeng, K. (2012). *Pregnancy in adolescence*. Retrieved from <http://www.ucbp.net/wp-content/uploads/2014/03/1-57-การตั้งครรภ์ในวัยรุ่น.pdf>
- Jusitthipraphai, T., Nirattharadorn, M., & Suwannarurk, K. (2015). The effects of promoting self-efficacy program on the oral contraceptive used behavior among adolescent mothers. *Journal of the Medical Association of Thailand, 98*(5), 444-450.
- Khumsaen, N., & Gary, F. A. (2009). Determinants of actual condom use among adolescents in Thailand. *Journal of the Association of Nurses in AIDS Care, 20*(3), 218-229. doi:10.1016/j.jana.2008.12.006
- Lemay, C. A., Cashman, S. B., Elfenbein, D. S., & Felice, M. E. (2007). Adolescent mothers' attitudes toward contraceptive use before and after pregnancy. *Journal of Pediatric and Adolescent Gynecology, 20*(4), 233-240. doi:10.1016/j.jpag.2006.09.016
- Mays, N., & Pope, C. (1995). Rigour and qualitative research. *British Medical Journal, 311*, 109-112.

- Nanda, K., Morrison, C. S., Kwok, C., Byamugisha, J., Jones, L., Sriplienchan, S., & Magwali, T. (2011). Discontinuation of oral contraceptives and depot medroxyprogesterone acetate among women with and without HIV in Uganda, Zimbabwe and Thailand. *Contraception*, 83(6), 542-548. doi:10.1016/j.contraception.2010.09.003
- Piyasirisilp, R., & Taneepanichskul, S. (2008). A clinical study of transdermal contraceptive patch in Thai adolescence women. *Journal of the Medical Association of Thailand*, 91(2), 137-141.
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9<sup>th</sup> ed.). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.
- Pongsatha, S., Ekmahachai, M., Chaovisitsaree, S., Sunthornlimsiri, N., & Morakote, N. (2009). Bone mineral density in women using depot medroxyprogesterone acetate (DMPA) for at least 2 years compared to a control group: A cross sectional study. *Journal of the Medical Association of Thailand*, 92(10), 1263-1267.
- Schunk D. H., & Meece, J. L. (2006). Self-efficacy development in adolescence. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 71-96). Greenwich, Connecticut: Information Age Publishing.
- Sriprasert, I., Chaovisitsaree, S., Sribanditmongkhol, N., Sunthornlimsiri, N., & Kietpeerakool, C. (2015). Unintended pregnancy and associated risk factors among young pregnant women. *International Journal of Gynaecology and Obstetrics*, 128(3), 228-231. doi:10.1016/j.ijgo.2014.09.004
- Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: SAGE.

- Thaithae, S., & Thato, R. (2011). Obstetric and perinatal outcomes of teenage pregnancies in Thailand. *Journal of Pediatric and Adolescent Gynecology*, 24(6), 342-346.  
doi:10.1016/j.jpag.2011.02.009
- Thongto, N. (2011). Risk factors for low birth weight newborns in Thailand. *Thai Population Journal*, 3(1), 51-69.
- United Nations Population Fund Thailand Country Office. (2014). *The state of Thailand' population 2013: Motherhood in childhood facing the challenge of adolescent pregnancy*. Retrieved from <http://countryoffice.unfpa.org/thailand/drive/MotherhoodinChildhood.pdf>
- U.S. Department of Health, Education, and Welfare. (1979). *The Belmont report edthical principles and guidelines for the protection of human subjects of research*. Retrieved from [https://causes.washington.edu/socw1580/read/Belmont\\_Report.pdf](https://causes.washington.edu/socw1580/read/Belmont_Report.pdf)
- Waltz, C. F., Strickland, O. L., & Lenz, E. R. (2010). *Measurement in nursing and health research* (4<sup>th</sup> ed.). New York: Springer Publishing.
- Wilson, E. K., Samandari, G., Koo, H. P., & Tucker, C. (2011). Adolescent mothers' postpartum contraceptive use: A qualitative study. *Perspectives on Sexual & Reproductive Health*, 43(4), 230-237. doi:10.1363/4323011
- World Health Organization. (2016). *Adolescent pregnancy*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs364/en/>
- Zeck, W., Bjelic-Radisic, V., Haas, J., & Greimel, E. (2007). Impact of adolescent pregnancy on the future life of young mothers in terms of social, familial, and educational changes. *Journal of Adolescent Health*, 41(4), 380-388. doi:10.1016/j.jadohealth.2007.05.012

**Paper 1: Characteristics, Contraceptive Knowledge, and Contraceptive Self-Efficacy  
of Thai Adolescent Mothers**

Thailand is experiencing an increase in repeat pregnancy in adolescents which is an indicator of reproductive health service challenge (United Nations Population Fund Thailand Country Office, 2014). This problem might be caused by inadequate contraceptive education for adolescent mothers immediately following birth (Wilson, Samandari, Koo, & Tucker, 2011). Pregnancy in adolescence leads to health, social, and economic disadvantages.

Because of biological immaturity, low body mass index, and inadequate nutrition, pregnancy in adolescence increases the risk of maternal and fetal morbidity and mortality. In low and middle-income countries including Thailand, the studies found that adolescent mothers may be at risk for anemia, cesarean sections, operative delivery, and postpartum complications and the baby is at increased risk for low birth weight, structural congenital abnormalities, still birth, and neonatal death (Areemit et al., 2012; Chandra-Mouli, McCarraher, Phillips, Williamson, & Hainsworth, 2014; Chantrapanichkul & Chawanpaiboon, 2013). In addition, adolescent mothers may face social and economic problems, such as repeating grades, dropping out of school, unsafe abortion, physical or verbal abuse, single-parenthood, lack of job opportunities, and decreased earning potential (Dallas, 2013; Leung, Shek, & Li, 2016).

Thai mothers aged 15 to 19 years were 2.6 times more likely to have newborns with low birth weight, compared to mothers aged 20 to 34 years (Thongto, 2011). Jeng (2012) found that 23.8% of Thai pregnant women aged 15-19 years had had an abortion. Another study showed that within 2.5 years after delivery, most adolescents ended their relationship with their partner,

depended on their parents, did not finish high school, and were unsatisfied with their income and occupation (Zeck, Bjelic-Radusic, Haas, & Greimel, 2007).

In Thailand, engaging in premarital sex at an early age viewed by Thai society as inappropriate for a “good girl” and accessing contraception has been reported to be embarrassing for female adolescents (Khumsaen & Gary, 2009). Chiang Mai is Thailand’s second largest city and is situated in the north. It is the center of education, religion, modern industries, and career opportunities. Similar to other urban settings, the sexual norm of some Thai adolescents in Chiang Mai is changing and shifting away from traditional practices. Adolescent heterosexual relationships progress quickly. Previous study reported that 9% of female adolescents had first sexual intercourse at average age of 13 years or younger (Lanjakornsiripan et al., 2015). Meechamnan, Fongkaew, Chotibang, and McGrath (2014) also supported that Thai females aged between 13 and 14 years engaged in sexual activities due to pressure from their boyfriends and peer pressure.

Accessing contraceptives for Thai adolescents is difficult and contraceptive services do not provide adolescent friendly experiences. Tangmunkongvorakul et al. (2012) found that few sexually experienced female adolescents sought out contraceptive services when health facilities did not provide a private room and when health care providers had negative attitudes towards sexually active young people. Among adolescent pregnant women who had ever used contraception only 16.8% reported regular use and 37.5% of pregnant adolescents had never used any contraceptive method (Lanjakornsiripan et al., 2015).

In Thailand, the rate of repeat pregnancy in adolescents has increased from 11.3% to 12.8% between 2010 and 2014 (Bureau of Reproductive Health, 2015) and decreased to 12.2% in 2016 (Bureau of Reproductive Health, 2017). These numbers are higher than the national target rate of

less than 10% for repeat pregnancy in adolescence (Chiang Mai Provincial Health Office, 2018). Interestingly, adolescent repeat pregnancy rates in Chiang Mai continue to increase from 12.6% in 2016 to 18.2% in 2017 (Chiang Mai Provincial Health Office, 2018).

Thai adolescents had insufficient contraceptive knowledge while engaging in sexual activities (Meechamnan et al., 2014; Sriprasert, Chaovisitsaree, Sribanditmongkhon, Sunthornlimsiri, & Kietpeerakool, 2015). Knowledge of contraception alone is not enough to initiate and continue use of contraception. One factor that links knowledge and health behavior is self-efficacy (Jiusitthipraphai, Nirattharadorn, & Suwannarurk, 2015). Personal efficacy is needed in translating contraceptive knowledge into effective self-management, to control over sexual situations. Perceived self-efficacy predicts an individual's capability to use contraceptives, resulting in behavioral change (Bandura, 2006).

This descriptive cross-sectional study described the characteristics, contraceptive knowledge (CK) and the contraceptive self-efficacy (CSE) of Thai adolescent postpartum mothers. The hypotheses of the study are that:

1. Thai adolescent postpartum mothers have low levels of CK, determined by the mean score that is below 15 (developed based on Ip et al. (2009)) out of 26 from the contraceptive knowledge test (CKT).
2. Hypothesis 1.2: Thai adolescent postpartum mothers have low levels of CSE determined by the mean score that is below 56 (Ip et al., 2009) out of 90 from the contraceptive self-efficacy scale (CSES).

### **Methods**

A convenience sample (Polit & Beck, 2012) of 170 adolescent postpartum mothers was recruited between September 2017 and January 2018. The participants were recruited from

hospital-based wards at 5 hospitals in Chiang Mai Province. Research settings included one university hospital, one health promotion hospital, and three district hospitals. The inclusion criteria for this study included that the participants needed to be: 1) Thai ethnicity, 2) admitted to one of 5 postpartum wards, 3) aged 15-19 years at the time of delivery (regardless of parity, route of delivery, gestational age at delivery, live birth or still birth, multiple gestations, or extrauterine pregnancy), 4) more than 24 hours postpartum, 5) normal vital signs, and 6) agreed to participate in this study. Exclusion criteria were: 1) HIV infection, 2) experiencing postpartum complications, such as hemorrhage, infection, pre-eclampsia, eclampsia, severe pain, or traumatic disorder, or 3) experiencing psychotic conditions.

The study had two phases. Phase 1, a small pilot study of 10 participants was conducted to determine if the measures were clearly worded and understandable to the participants. Cronbach's alpha coefficient of the contraceptive self-efficacy scale (CSES) was 0.80 which was acceptable for this study (Devellis, 2012). Phase 2, included an additional 160 participants. Construct validity showed a positive correlation between CK and CSE, indicating that as knowledge increases so does self-efficacy.

Before the study started, participants aged 15 – less than 18 were asked to sign an assent form and participants aged 18 – 19 years were asked to sign a consent form. Then they were asked to respond to the 34 - item socio-demographic characteristic questionnaire, the 26 - item contraceptive knowledge test (CKT), and the 18 - item CSES. Study activities took approximately 45 minutes to complete. The institutional review boards at the University of Washington and the Faculty of Medicine Chiang Mai University approved the study.

Socio-demographic data included information about age, educational level, and other demographic and characteristic variables. Twenty-six items of CKT was adapted from “the

Demographic and Health Surveys (DHS) model woman's questionnaire" (Demographic and Health Surveys Program, 2015). The CKT (Ip, Sin, & Chan, 2009) was adapted for use in the Thai population by keeping the original 9 items and adding 17 new items drawn from the literature. The test measured knowledge of reproductive-related anatomy and physiology, signs of pregnancy, effectiveness and usage of oral contraception, injectable contraception, tubal resection, male condom, female condom, intrauterine device, and implants. The participants responded to a choice of "true," "false," or "do not know." Each correct answer was scored as a 1, whereas "false" and "do not know" responses were scored as 0. Possible total scores ranged from 0 - 26. The higher scores represent better contraceptive knowledge than the lower scores. Scores lower than 15 out of 26 indicate low contraceptive knowledge.

The CSES was originally developed by Levinson, Wan, and Beamer (1998). As cited in Heinrich (1993), Levinson developed the CSE scale based on the Social Cognitive Theory and indicated that the 18-item scale measures 4 factors: conscious acceptance of sexual activity by planning for it, assumption of responsibility for the direction of sexual activity and for using contraception, assertiveness in preventing sexual intercourse in an involved situation, and positively experiencing sexual feelings. The researcher modified four items of the CSES used to gain information about personal, interpersonal, and environmental variables in obtaining contraception. The CSES asked participants to rate each item on a five point Likert-scale ranging from 1 to 5, 1 = not at all true of me and 5 = completely true of me. The scoring directions required that items 2, 5, 6, 8, 9, 11, 12, 14, and 15 be reverse-coded, so that 1 = completely true of me and 5 = not at all true of me. The total scores range from 18 - 90. Higher scores indicate higher contraceptive self-efficacy. Scores below 56 out of 90 indicated low contraceptive self-efficacy.

### **Analysis**

Data were analyzed using SPSS for Windows version 22. Frequency, means, percentage, and standard deviations were used to describe characteristics, CK, and CSE of adolescent postpartum mothers. The CKT was obtained by summing the response scores across the 26 relevant items. A total score of CSES was obtained by summing the rating responses across the 18 relevant items.

### **Results**

Participants had a mean age of  $17.8 \pm 1.4$  years. The majority of adolescent mothers (84.4%) were Buddhists, 74.4% had low education, and almost all of the participants (97.5%) lived with family. The majority of participants (86.9%) lived far from the hospital within 25 kilometers, 46.9% of participants were employed, and 83.1% of adolescent mothers had a low monthly income. With regards to marital status, living with partners (married and unmarried) accounted for 83.8% and the vast majority of participants (98.1%) planned to take contraceptives immediately after birth. It was found that 69.4% of participants had heard about contraception from their healthcare providers, 66.9% of adolescent mothers had ever attended a formal contraceptive class, and around half knew of the side effects of contraception. Previous to the current delivery, most participants (85%) had no live children and 83.1% of participants had their partners accompany them to the antenatal clinic.

The majority (75%) of adolescent mothers reported drinking before and during some of their pregnancy, 20.6% had ever smoked in their lifetime, and only 1.3% had ever used illegal drugs. With regards to depressive symptoms, 36.9% of adolescent mothers had a history of depressive symptoms, and only 1.3% of participants reported having depressive symptoms after

this current birth. Of the total number of adolescent mothers ( $n = 160$ ), 10% were abused by their parents or relatives and 16.9% were abused by their partners (Table 1.1).

Table 1.1

*Demographics, Socioeconomic and Reproductive Characteristics*

Characteristics	No.	%
Age (mean = 17.82, SD = 1.36, median = 18.00)		
15 years	15	9.4
16 years	15	9.4
17 years	29	18.1
18 years	26	16.3
19 years	75	46.9
Education		
No or primary or secondary school	119	74.4
Vocational degree	29	18.1
Some college or bachelor	12	7.5
Religion		
Buddhism	135	84.4
Other	25	15.6
Family status		
Living alone	2	1.3
Living with friend and/or employer	2	1.3
Living with partner and/or family	156	97.5
Distance from home to hospital (kilometers)		
1-25	139	86.9
26-50	17	10.6
51-100	4	2.5
Employment status		
Unemployed	54	33.8
Employed	75	46.9
Self-employed	31	19.4
Income		
Low	133	83.1
Average	16	10.0
High	11	6.9
Marital status		
Single (not dating)	16	10.0
Partnered (not living together)	10	6.3
Living with partner/spouse	134	83.8
Plan contraception after delivery		
Yes	157	98.1
Told by providers about contraception		
Yes	111	69.4

Characteristics	No.	%
Attending contraceptive educational class		
Yes	107	66.9
Told by providers about side effect		
Yes	88	55.0
Have lived children before current pregnancy		
Yes	24	15.0
Partner accompanied to antenatal clinic		
Yes	133	83.1
Drank alcohol		
Yes	120	75.0
Smoking		
Yes	33	20.6
Drug use		
Yes	2	1.3
History of depressive symptom (s)		
Yes	59	36.9
Current depressive symptom (s)		
Yes	2	1.3
Abused by parents or relatives		
Yes	16	10.0
Abused by boyfriend or partner		
Yes	27	16.9

The data in Table 1.2 show the CK scores of adolescent postpartum mothers. The mean score of the CKT was 15.7 (SD 3.7), with a minimum score of 7 and a maximum score of 24. Of participants, 39.4% were below 15 and 60.6% were above 15. The majority (86.3%) of participants did not know the appropriate time to start injectable contraceptives, while 80.6% and 75.6% of adolescents did not understand the side effects and self-care required while taking injectable contraceptives, respectively. Knowledge of breastfeeding was an area of concern because 83.8% of participants did not know that effective breastfeeding could reduce the rate of pregnancy and 83.1% did not realize that the progestin-only pill did not affect maternal breast milk. With regards to oral contraceptives, 68.1% did not know that they should take the pill within 5 days of the onset of menstruation. Sixty-two point five percent of postpartum mothers did not have a clear understanding of ovulation and 64.4% of participants did not understand that

they could get pregnant if sexual intercourse occurred three days before and one day after ovulation. It is noteworthy that 63.7% of adolescents were not familiar with the intrauterine device and 50.6% of participants incorrectly believed that the rhythm method was an effective form for contraception.

Overall, 99.4% knew that males had to put on the male condom before sexual intercourse to prevent pregnancy, 96.9% knew that pregnancy was possible if sexual intercourse occurred after reaching adolescence, and 95.6% knew that the oral contraceptive pill must be taken every day to avoid pregnancy. The majority of participants (85.6%) were aware that women could get pregnant at their first sexual intercourse and 85% understood that they might get pregnant in the absence of menstruation. Most participants (83.1%) knew that those using injectable contraceptives should meet with their healthcare provider for a repeat injection every 3 months.

Table 1.2

*Contraceptive Knowledge*

Items	Correct (%)	Wrong (%) + Do not know (%)
1. Once menstruating, a women can get pregnant if she engages in sexual intercourse.	96.9	3.1
2. Ovulation occurs 14-16 days before the next menstruation.	37.5	62.5
3. It is most likely for a woman to get pregnant during the middle of the menstruation period.	60.6	39.4
4. In the absence of menstruation, a sexually active woman might get pregnant.	85.0	15.0
5. A woman cannot get pregnant if it is her first sexual experience.	85.6	14.4
6. Women can have an injection from a health provider that stops them from becoming pregnant for 3 months.	80.0	20.0
7. A woman can initiate injection within 7 days of the onset of menses.	13.8	86.3
8. If a woman starts the injection more than 7 days of the onset of menses, she should use other back-up contraceptive methods for 7 days after injection, such as abstinence or condoms.	24.4	75.6

Items	Correct (%)	Wrong (%) + Do not know (%)
9. Those using injectable contraceptives should return to their health provider every 3 months for repeat injections.	83.1	16.9
10. Injections will not cause a delay in return of fertility.	19.4	80.6
11. Injections are a highly effective method.	74.4	25.6
12. Progestin-only pill is recommended for breastfeeding mothers because it has no impact on maternal breast milk.	16.9	83.1
13. Up to six months after birth and before the menstrual period has returned, women should use a method requiring frequent breastfeeding day and night to avoid pregnancy.	16.3	83.8
14. Women can have tubal resection to avoid having any more children.	80.6	19.4
15. Women can have a loop or coli (intrauterine device) placed inside by a doctor or nurse, which can prevent pregnancy for one or more years.	36.3	63.7
16. A man can put a male condom on his penis before sexual intercourse.	99.4	0.6
17. When using a male condom, one should not apply oil-based lubricant (such as baby oil) to the condom.	79.4	20.6
18. A woman can put a female condom in her vaginal before sexual intercourse.	66.9	33.1
19. Condoms are the most effective method for avoiding pregnancy.	64.4	35.6
20. Women should take the oral contraceptive pill every day to avoid becoming pregnant.	95.6	4.4
21. Women should start taking oral contraceptive pills within 5 days of the onset of menses.	31.9	68.1
22. It is 100% that a woman will not get pregnant if she takes oral contraceptive pills.	75.6	24.4
23. As an emergency measure, within three days after they have unprotected sexual intercourse, women can take emergency pills to prevent pregnancy.	79.4	20.6
24. Women can have one or more small rods placed in their upper arm by a doctor or a nurse, which can prevent pregnancy for one or more years.	76.9	23.1
25. Three days before and 1 day after ovulation is recognized as a safety period for sexual intercourse.	35.6	64.4
26. Rhythm is a highly effective method for contraception.	49.4	50.6

Participant CSE scores are shown in Table 1.3. The data represent the beliefs of adolescent postpartum mothers regarding their ability to control sexual and contraceptive

situations to achieve contraceptive protection. The CSE scores range from 18 - 90, with a mean score of 60.8 (SD = 9.3), a minimum score of 39, and a maximum score of 80. Of participants, 29.4% were below 56 and 70.6% were above 56. The vast majority (98.8%) of participants reported that they could not initiate a sexual relationship with a man. The items with the highest rate of CSE related to sexual communication were “tell him I was on the pill or had an IUD (52.5%), “if my partner and I are getting turned on sexually and I don’t really want to have sexual intercourse, I can easily tell him “no” and mean it” (49.4%), and “easily ask him if he had protection (or tell him that I didn’t) (46.3%).

Regarding contraceptive practice, 59.4% of adolescent mothers felt embarrassed asking for contraceptives at the pharmacy, 56.9% of participants could not continue to use birth control if they thought their parents might find out, and 48.1% of adolescents were unable to ask their partners about using contraceptives.

Table 1.3

*Contraceptive Self-Efficacy*

Items	Scores									
	1		2		3		4		5	
	No	%	No	%	No	%	No	%	No	%
1. When I am with a partner I feel that I can always be responsible for what happens sexually with him.	16	10.0	25	15.6	57	35.6	34	21.3	28	17.5
2. Even if a partner can talk about sex, I can’t tell him how I really feel about sexual things.	22	13.8	32	20.0	34	21.3	27	16.9	45	28.1
3. When I have sex, I can enjoy it as something that I really wanted to do.	14	8.8	31	19.4	72	45.0	34	21.3	9	5.6

Items	Scores									
	1		2		3		4		5	
	No	%	No	%	No	%	No	%	No	%
4. If my partner and I are getting “turned on” sexually and I don’t really want to have sexual intercourse, I can easily tell him “No” and mean it.	18	11.3	12	7.5	17	10.6	34	21.3	79	49.4
5. If my partner didn’t talk about the sex that was happening between us, I couldn’t either.	38	23.8	35	21.9	35	21.9	21	13.1	31	19.4
6. When I think about what having sex means, I can’t have sex so easily.	16	10.0	49	30.6	40	25.0	25	15.6	30	18.8
7. If my partner and I are getting “turned on” sexually and I don’t really want to have sexual intercourse (go all the way, get down), I can easily stop things so that we don’t have intercourse.	36	22.5	18	11.3	30	18.8	44	27.5	32	20.0
8. There are times when I’d be so involved sexually or emotionally that I could easily have sexual intercourse even if I weren’t protected (using a form of birth control).	14	8.8	34	21.3	54	33.8	33	20.6	25	15.6
9. Sometimes I just go along with what my date wants to do sexually because I think that I am not able to say what I want.	6	3.8	20	12.5	45	28.1	35	21.9	54	33.8
10. If there were a man (boyfriend) to whom I was very attracted physically and emotionally, I could feel comfortable telling him that I wanted to have sex with him.	158	98.8	2	1.3	0	0	0	0	0	0
11. I couldn’t continue to use a birth control method if I thought that my parents might find out about it.	22	13.8	15	9.4	17	10.6	15	9.4	91	56.9

Items	Scores									
	1		2		3		4		5	
	No	%	No	%	No	%	No	%	No	%
12. It would be hard for me to go to the drugstore and ask for contraceptive pills and other products (Encare Ovals, a diaphragm, etc.) because I feel embarrassed.	16	10.0	20	12.5	18	11.3	11	6.9	95	59.4
13. If my partner and I were getting really heavy into sex and moving towards intercourse. I could:										
a. Easily ask him if he had protection (or tell him that I didn't).	17	10.6	9	5.6	18	11.3	42	26.3	74	46.3
b. Excuse myself to put in a female condom or a diaphragm (if I used them for birth control).	27	16.9	13	8.1	25	15.6	38	23.8	57	35.6
c. Tell him I was on the pill or had an IUD (if I used them for birth control).	4	2.5	9	5.6	23	14.4	40	25.0	84	52.5
d. Stop things before intercourse, if I couldn't bring up the subject of protection.	18	11.3	12	7.5	30	18.8	38	23.8	62	38.8
14. There are times when I should talk to my partner about using contraceptives, but I can't seem to do it in the situation.	12	7.5	19	11.9	35	21.9	17	10.6	77	48.1
15. Sometimes I end up having sex with a partner because I can't find a way to stop it.	11	6.9	18	11.3	42	26.3	26	16.3	63	39.4

## Discussion

### Contraceptive Knowledge

The 15.7 CK mean score of the total score of 26 was considered high compared to the study's hypothesis. The participants could be regarded as having an above medium level of contraceptive knowledge. However, Thai adolescents avoid asking about contraception because they might be afraid of blame or rejection from parents and others. This causes a deficit

knowledge and misunderstanding about contraception, leading to an increase of adolescent pregnancy rate in Thailand (Bureau of Reproductive Health, 2016).

The Ministry of Public Health has put effort into increasing CK and developing appropriate sexual education programs, especially for children and teenagers who are considered at risk populations. In the current educational system, Thai students start learning about sexuality and contraception when they are in primary school and/or secondary school. The curriculum is designed to be appropriate to their age (Department of Health, 2016).

Thai adolescents who are high school graduates also received support from higher educational institutions and community health centers which provide contraceptive information through a variety of outlets such as a Safe Sex Training Program, Youth Friendly Health Service (Chiang Mai Provincial Health Office, 2017), handbook for adolescent reproductive and sexual health (through social media) (Department of Health, 2015), as well as Hotline 1300 One Stop Crisis Center. Over half of the participants reported that they had attended a formal contraceptive class and had previously discussed contraceptive side effects with their healthcare providers. Similar to a previous study (Loewenberg Weisband, Keder, Keim, & Gallo, 2017), 57% of women discussed postpartum contraception options with their healthcare provider during prenatal care. Providing opportunities for adolescent mothers to discuss contraception can help promote their understanding of how to use contraception after birth.

Participants had limited knowledge regarding the appropriate time to initiate injectable contraceptives and its side effects. The majority of participants did not know that the progestin-only pill has no effect on maternal breast milk. More than half of adolescent mothers had no knowledge of IUDs, which are recognized as an effective contraceptive option for postpartum women. According to the recommendations from the Centers for Disease Control and Prevention

(CDC), the progestin-only pill, injections (Depot medroxy-progesterone acetate: DMPA), the etonogestrel implant, and levonorgestrel or copper IUD were the methods that had no restrictions or their advantages outweighed the risks for postpartum non-breastfeeding and breastfeeding women (Klein, Arnold, & Reese, 2015). It is necessary to provide accurate and sufficient contraceptive knowledge to pregnant adolescents during prenatal care, in order to strengthen their contraceptive knowledge regarding the safety and effectiveness of different methods. Before discharge from the hospital, discussion about contraceptive options and contraceptive services available can help to promote adolescents' ability to decide on contraceptive method.

### **Contraceptive Self-Efficacy**

Participants had a mean score of CSE of 60.8, which was considered higher than the hypothesis, and could be regarded as a moderate level of CSE. The findings indicated that participants were not confident that they could control sexual and contraception situations to achieve contraceptive protection. Their developmental stage of entering adolescence could account for this as they are forming a sense of efficacy and transitional stressors may increase or decrease their self-efficacy of contraception. Some factors, such as age, status and their roles in the educational, familial, occupational, and social system may influence their competence as well (Bandura, 2006).

It was found that 98.8% of participants would not initiate a sexual relationship with a man. Within the Thai cultural norm, it is the male's role to initiate sexual relationships. Parents often tell their daughters that "a good girl" would not discuss sex or initiate sex with a man (Khumsaen & Gary, 2009).

Most participants lived with their partners outside of marriage and did not tell their parents about the relationship. Even so, 56.9% would not continue to use birth control out of fear

that their parents might find out about it. Similarly, 59.4% of participants were embarrassed to go to the pharmacy to ask for contraceptives. These might explain what prevented these adolescent mothers from using contraception. In Thailand, people still have negative attitudes towards sexually active young females and unmarried young females as they are not expected to be sexually active (Khumsaen & Gary, 2009; Meechamnan, Fongkaew, Chotibang, & McGrath, 2014). This cultural taboo makes it difficult and embarrassing for female adolescents to access contraception and to ask for contraceptive facilities (Tangmunkongvorakul et al., 2012). It is also possible that female adolescents might not perceive risk of getting pregnant because of their young age. The results of the present study showed that only a few participants planned to use contraception immediately after birth, which puts them at risk for rapid repeat pregnancy.

### **Limitations**

There were three main limitations in this study: limited generalizability, self-report bias, and unknown causes of used or unused contraception. The biggest limitation was generalizability. The results of the study were limited to adolescent postpartum mothers who met the study's inclusion criteria. However, the researcher intended to enhance the generalizability of this study through several strategies.

First, the study recruited as many participants as possible during a 6-month period to increase generalizability and statistical power. Second, the participants were from 5 hospital-based settings with variable environmental and demographic characteristics. This allowed the study to obtain a heterogeneous sample. Third, according to Polit and Beck (2010), knowledge does not come from testing new instruments or inventing new constructs, but can be obtained through confirmation of other findings. The study was conducted to assess CK and CSE with a different sample, context, and time, which could strengthen generalizability. Fourth, the

researcher was very close to the data, doing all the data collection and analysis in order to confirm the accuracy of the analysis and conclusions. Lastly, the study provided information about the participants, such as their socio-demographic, and social characteristics, in order to allow readers to understand the context of the study.

Another limitation was that all data were self-reported. Because of cultural norms and social acceptability of sexual disclosure, adolescent postpartum mothers might underreport some issues related to contraception and sexual behaviors. During collecting data, if the participants were reluctant to answer the questions, the researcher would generate conversation to support the participants' response.

Finally, this cross-sectional study cannot explain causality or reflect deep insight of the reasons why the participants used or unused contraception including emotions of individuals' experiences. The results of the study only explained the socio-demographic characteristics, CK, and CSE of adolescent postpartum mothers at 5 hospital-based wards in Chiang Mai, Thailand.

### **Implications**

Adolescents are in a transitional phase and have to face challenges and opportunities to personally form knowledge and capability of contraception. Promoting contraceptive knowledge and contraceptive self-efficacy in adolescents requires collaboration from schools, healthcare settings, and the local administration.

In schools, adolescent females might have gained some knowledge about contraception and sexuality from their teachers. However, they still had insufficient contraceptive knowledge while engaging in sexual activities (Meechamnan et al., 2014). Sexual education in schools should promote adolescents' understanding of a variety of contraceptive methods, the male and female reproductive system, and contraceptive practice. Students should have an opportunity to

learn not only about male condoms, but also injectable contraceptives, oral contraceptive pills, emergency contraception pills, IUDs, etc. The menstrual cycle and ovulation period are also crucial.

School-based sexual education should include contraceptive negotiation skills for students. The results of this study show that around half of participants lack self-confidence in contraceptive negotiation. Male partners might have no awareness about contraception and not care about pregnancy prevention (Fantasia, Sutherland, Fontenot, & Ierardi, 2014). Teaching students contraceptive negotiation skills may help to increase female adolescents' confidence to initiate contraceptive discussions before engaging in sexual activity.

Healthcare providers caring for female adolescents should establish a contraception program during preconception, prenatal, and postpartum care. Preconception education should provide information about family planning to adolescent couples. Female and male partners can choose to avoid pregnancy, to space a future pregnancy, or to decide on a birth control method. Prenatal care clinics should include counseling and contraceptive education which a focus on contraceptive methods recommended for breastfeeding mothers, such as the progestin-only pill, DMPA, implants, and IUDs. Adolescent mothers need to know the advantage of effective breastfeeding which can prevent rapid repeat pregnancy. Postpartum adolescent women should have the opportunity to attend a contraceptive class before they are discharged. The class should focus on dual methods, signs and symptoms that would necessitate a return to the clinic, return to fertility after discontinuing contraceptives, and contraceptive services available. If necessary, healthcare providers need to provide information about the referral and social welfare system to adolescent mothers.

The United Nations Population Fund Thailand Office (2014) reports that girls who were not in school had a higher chance of getting pregnant than their peers who were still enrolled. Therefore, local administrations should establish programs to encourage students to stay in school at least until they complete their compulsory education in high school (12<sup>th</sup> grade). Community peers, such as children and youth networks can help adolescent mothers to access contraceptive counseling and services. Integrating contraceptive information with the most effective media source and message can help to reach the target groups.

**Conflict of interest**

There are no conflicts of interests to declare.

### References

- Areemit, R., Thinkhamrop, J., Kosuwon, P., Kiatchoosakun, P., Sutra, S., & Thepsuthammarat, K. (2012). Adolescent pregnancy: Thailand's national agenda. *Journal of the Medical Association of Thailand, 95 Suppl 7*, S134-142.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, Connecticut: Information Age Publishing.
- Bureau of Reproductive Health. (2017). *Reproductive health situation in adolescents*. Retrieved from [http://rh.anamai.moph.go.th/ewt\\_dl\\_link.php?nid=23](http://rh.anamai.moph.go.th/ewt_dl_link.php?nid=23)
- Bureau of Reproductive Health (2016). *The policies and strategies on the prevention and solution of the adolescent pregnancy problem*. Bangkok, Thailand: Thailand Department of Health.
- Bureau of Reproductive Health. (2015). *Fact sheet adolescent and reproductive health*. Retrieved from <http://rh.anamai.moph.go.th/download/pdf/FactSheet-%20OK.pdf>
- Chandra-Mouli, V., McCarraher, D. R., Phillips, S. J., Williamson, N. E., & Hainsworth, G. (2014). Contraception for adolescents in low and middle income countries: Needs, barriers, and access. *Reproductive Health, 11*(1), 1. doi:10.1186/1742-4755-11-1
- Chantrapanichkul, P., & Chawanpaiboon, S. (2013). Adverse pregnancy outcomes in cases involving extremely young maternal age. *International Journal of Gynaecology and Obstetrics, 120*(2), 160-164. doi:10.1016/j.ijgo.2012.08.024
- Chiang Mai Provincial Health Office. (2018). *Provincial inspeculate report 2018*. Chiang Mai, Thailand: Health Promotion Group.

- Chiang Mai Provincial Health Office. (2017). *Provincial inspeculate report 2017*. Chiang Mai, Thailand: Health Promotion Group.
- Dallas, C. M. (2013). Rapid repeat pregnancy among unmarried, African American adolescent parent couples. *Western Journal of Nursing Research*, 35(2), 177-192. doi:10.1177/0193945912463268
- Demographic and Health Surveys Program. (2015). *Demographic and health surveys model woman's questionnaire*. Retrieved from [http://dhsprogram.com/pubs/pdf/DHSQ7/DHS7\\_Womans\\_QRE\\_EN\\_12Oct2015\\_DHSQ7.pdf](http://dhsprogram.com/pubs/pdf/DHSQ7/DHS7_Womans_QRE_EN_12Oct2015_DHSQ7.pdf)
- Department of Health (2016). *Act for prevention and solution of the adolescent pregnancy problem, B.E. 2559 (2016)*. Bangkok, Thailand: Minister of Publish Health.
- Department of Health (2015). *Guideline for prevention and solution of teenage pregnancy problem*. Bangkok, Thailand: Agricultural Cooperative Printing of Thai.
- DeVellis, R. F. (2012). *Scale development: Theory and applicatiions* (3<sup>rd</sup> ed.). Los Angeles, CA: SAGE.
- Fantasia, H. C., Sutherland, M. A., Fontenot, H., & Ierardi, J. A. (2014). Knowledge, attitudes and beliefs about contraceptive and sexual consent negotiation among college women. *Journal of Forensic Nursing*, 10(4), 199-207. doi:10.1097/jfn. 0000000000000046
- Heinrich, L. B. (1993). Contraceptive self-efficacy in college women. *Journal of Adolescent Health*, 14(4), 269-276.
- Ip, W. Y., Sin, L. L., & Chan, D. S. (2009). Contraceptive self-efficacy and contraceptive knowledge of Hong Kong Chinese women with unplanned pregnancy. *Journal of Clinical Nursing*, 18(17), 2416-2425. doi:10.1111/j.1365-2702.2009.02829.x

Jeng, K. (2012). *Pregnancy in adolescence*. Retrieved from <http://www.ucbp.net/wp-content/uploads/2014/03/1-57-การตั้งครรภ์ในวัยรุ่น.pdf>

Jusitthipraphai, T., Nirattharadorn, M., & Suwannarurk, K. (2015). The effects of promoting self-efficacy program on the oral contraceptive used behavior among adolescent mothers. *Journal of the Medical Association of Thailand*, 98(5), 444-450.

Khumsaen, N., & Gary, F. A. (2009). Determinants of actual condom use among adolescents in Thailand. *Journal of the Association of Nurses in AIDS Care*, 20(3), 218-229.  
doi:10.1016/j.jana.2008.12.006

Klein, D. A., Arnold, J. J., & Reese, E. S. (2015). Provision of Contraception: Key Recommendations from the CDC. *American Family Physician*, 91(9), 625-633.

Lanjakornsiripan, W., Amnatbuddee, S., Seejorn, K., Werawatakul, Y., Kleebkaow, P.,

Komwilaisak, R., & Luanratanakorn, S. (2015). Contraceptive practices and pregnancy intendedness among pregnant adolescents. *International Journal of Women's Health*, 7, 315-320. doi:10.2147/ijwh.s77077

Leung, J., Shek, D., & Li, L. (2016). Mother-child discrepancy in perceived family functioning and adolescent developmental outcomes in families experiencing economic disadvantage in Hong Kong. *Journal of Youth and Adolescence*, 45(10), 2036-2048.  
doi:10.1007/s10964-016-0469-3

Levinson, R. A., Wan, C. K., & Beamer, L. J. (1998). The contraceptive self-efficacy scale: Analysis in four samples. *Journal of Youth and Adolescence*, 27(6), 773-793

- Loewenberg Weisband, Y., Keder, L. M., Keim, S. A., & Gallo, M. F. (2017). Postpartum intentions on contraception use and method choice among breastfeeding women attending a university hospital in Ohio: A cross-sectional study. *Reproductive Health, 14*(1), 45. doi:10.1186/s12978-017-0307-4
- Meechamnan, C., Fongkaew, W., Chotibang, J., & McGrath, B. B. (2014). Do Thai parents discuss sex and AIDS with young adolescents? A qualitative study. *Nursing & Health Sciences, 16*(1), 97-102 106p. doi:10.1111/nhs.12072
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9<sup>th</sup> ed.). Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.
- Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies, 47*(11), 1451-1458. doi:10.1016/j.ijnurstu.2010.06.004
- Sriprasert, I., Chaovitsaree, S., Sribanditmongkhon, N., Sunthornlimsiri, N., & Kietpeerakool, C. (2015). Unintended pregnancy and associated risk factors among young pregnant women. *International Journal of Gynaecology and Obstetrics, 128*(3), 228-231. doi:10.1016/j.ijgo.2014.09.004
- Tangmunkongvorakul, A., Banwell, C., Carmichael, G., Utomo, I. D., Seubsman, S. A., Kelly, M., & Sleigh, A. (2012). Use and perceptions of sexual and reproductive health services among northern Thai adolescents. *Southeast Asian Journal of Tropical Medicine and Public Health, 43*(2), 479-500.
- Thongto, N. (2011). Risk factors for low birth weight newborns in Thailand. *Thai Population Journal, 3*(1), 51-69.

United Nations Population Fund Thailand Country Office. (2014). *The state of Thailand'*

*population 2013: Motherhood in childhood facing the challenge of adolescent pregnancy.*

Retrieved from [http://countryoffice.unfpa.org/thailand/drive/ MotherhoodinChildhood.pdf](http://countryoffice.unfpa.org/thailand/drive/MotherhoodinChildhood.pdf)

Wilson, E. K., Samandari, G., Koo, H. P., & Tucker, C. (2011). Adolescent mothers' postpartum contraceptive use: A qualitative study. *Perspectives on Sexual & Reproductive Health*, 43(4), 230-237. doi:10.1363/4323011

Zeck, W., Bjelic-Radisic, V., Haas, J., & Greimel, E. (2007). Impact of adolescent pregnancy on the future life of young mothers in terms of social, familial, and educational changes. *Journal of Adolescent Health*, 41(4), 380-388. doi:10.1016/j.jadohealth. 2007.05.012

**Paper 2: Correlates of Thai Adolescent Mothers' Characteristics,  
Contraceptive Knowledge, and Contraceptive Self-Efficacy**

Repeat adolescent pregnancy is a major concern in Thailand as it causes health problems for both mothers and their babies (Thailand Bureau of Reproductive Health, 2014). The Thailand Ministry of Public Health recommends that adolescent mothers space their pregnancies by at least 2 years, or until they turn 20 years old (United Nations Population Fund Thailand Country Office, 2014). Twenty to thirty-five is considered the appropriate age for health reasons to become pregnant (Lanjakornsiripan et al., 2015).

Repeat pregnancy in adolescents is influenced by several factors, including socio-demographic factors, lack of contraceptive information, and past and present community context (Edmeades, 2008). Adolescent females are in a transitional phase and face many challenges and opportunities for personal growth. Thai female adolescents often avoid asking about contraception because they are afraid of blame or rejection from their parents (Meechamnan et al., 2014). Sexual relationships are a new experience for adolescents. Adolescent females may lack of knowledge about contraception and do not perceive risk of getting pregnant (Haque & Soonthorndhada, 2009).

A study in Chiang Mai, Thailand found that 35.6% of pregnant women aged between 15 and 24 years did not use any contraceptive method at the time of conception due to concerns of the adverse effects and their safety (Sriprasert, Chaovisitsaree, Sribanditmongkhon, Sunthornlimsiri, & Kietpeerakool, 2015). A different study in Thailand found that a number of postpartum women (14%) had already had vaginal sexual intercourse by their 6-week postpartum follow-up visit when family planning practices and contraceptive choices are discussed

(Chaovitsaree, Noi-um, & Kietpeerakool, 2012). The failure to use contraception and the early return to sexual activity postpartum may point to insufficient contraceptive education during pregnancy and postpartum period.

However, knowledge of contraception alone is insufficient to cause a change in contraceptive behavior (Jusitthipraphai, Nirattharadorn, & Suwannarurk, 2015). Bandura (2006) believed that personal efficacy can increase effective use of contraceptives. Khumsaen and Gary (2009) found that condom use self-efficacy was important in influencing condom use among Thai adolescents in vocational schools. In contrast, Viseskul, Fongkaew, Settheekul, and Grimes (2013) found no relationship between sexual self-efficacy and condom use among Thai youths living with HIV/AIDS.

The Thailand National Health Ministry has set a target rate of less than 10% for repeat pregnancy in adolescents (Chiang Mai Provincial Health Office, 2018). However, the adolescent rate is increasing and higher than the national target. In 2016, the national repeat pregnancy rate in adolescents was 12.2%, while the rates in Chiang Mai were 12.6% and 18.2% in 2016 and 2017, respectively (Chiang Mai Provincial Health Office, 2018).

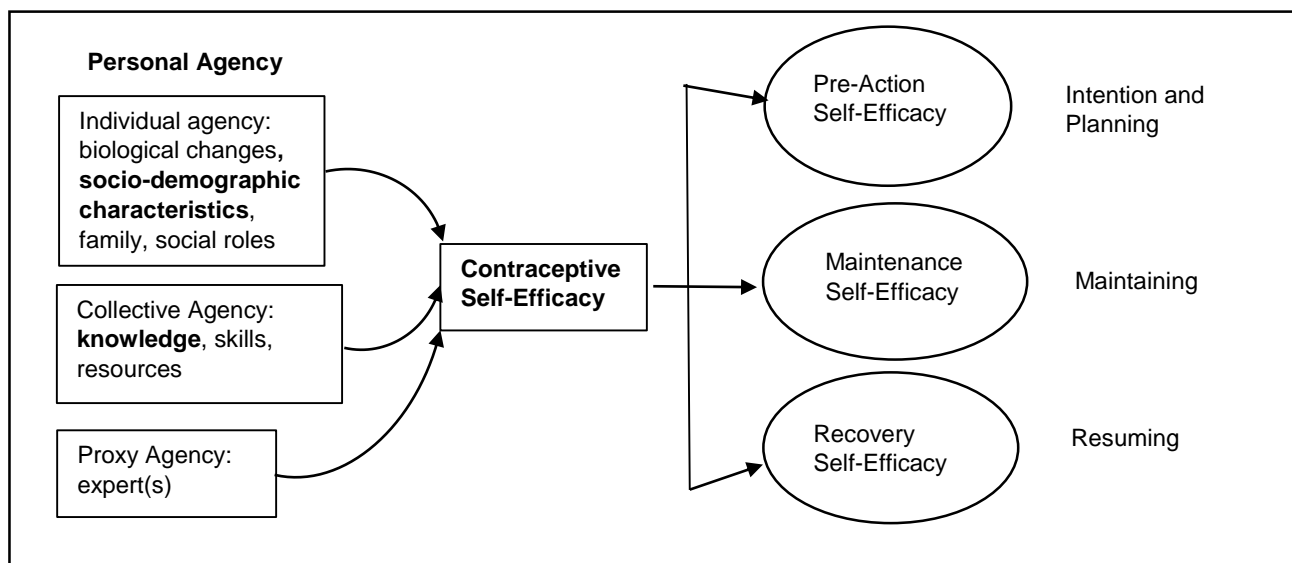
This paper focused on assessing the relationships of socio-demographic characteristics with contraceptive knowledge (CK) and contraceptive self-efficacy (CSE) of Thai adolescent mothers and used the Social Cognitive Theory (SCT) as a framework for the study.

### **Conceptual Framework**

This study was informed by the SCT, which has self-efficacy as its core component (Schunk & Meece, 2006). The SCT provides a framework of personal behavior and environmental interaction that can be applied to contraceptive use. The theory also posits that self-efficacy influences personal behavior. Personal agency and its relationship to CSE are the

main interests of this study. A person with high self-efficacy will seek well-being and desired outcomes through 3 modes of personal agency: individual, collective, and proxy (Bandura, 2006). Individual agency is linked to a person's biological changes, socio-demographic characteristics, family status, and social roles. Proxy agency refers to a contraceptive expert or someone else who can act on behalf of the individual. Collective agency includes contraceptive knowledge, skills, and resources. In this study, CK is defined as an adolescent mother's knowledge of reproductive-related anatomy and physiology, effectiveness and usage of contraceptives, and signs of pregnancy. CSE refers to an adolescent mother's confidence in her capability to use contraceptives and to control sexual situations (Ip, Sin, & Chan, 2009) (see Figure 2.1).

**Figure 2.1** Conceptual Framework of Personal Agency and Contraceptive Self-Efficacy Belief



Female adolescents are in a transitional period filled with pubertal, emotional, and sexual changes. Their previous experiences might impact their intention and planning of contraception after delivery. It was assumed that CSE belief occurring during the postpartum period is a new intention of the pre-action self-efficacy stage (Schwarzer & Luszczynska, 2006). CSE might

predict the level of intention and planning of contraceptive behavior, but does not directly predict the behavior (Bandura, 1986).

This descriptive cross-sectional study aimed to assess the relationships of socio-demographic characteristics with CK and CSE and the relationship between CSE and CK of Thai adolescent postpartum mothers. The researcher hypothesized that:

1. There are statistically significant positive relationships between CK and older age, high educational level, family status, marital status, number of children, attending contraceptive class, as well as a statistically significant negative relationship between CK and a greater distance from home to the hospital.

2. There are statistically significant positive relationships between CSE and older age, high educational level, family status, marital status, number of children, attending contraceptive class, as well as a statistically significant negative relationship between CSE and a greater distance from home to the hospital.

3. There is a statistically significant positive relationship between CSE and CK.

4. Age, educational level, family status, marital status, number of children, attending contraceptive class, and distance from home to the hospital predict CSE.

5. Age, educational level, family status, marital status, number of children, attending contraceptive class, and distance from home to the hospital predict CK.

### **Methods**

A convenience sample (Polit & Beck, 2012) of 170 adolescent postpartum mothers (10 for pilot study, 160 for main study) was recruited from September 2017 to January 2018. The participants were from hospital-based wards at 5 hospitals in Chiang Mai Province. The research settings included one university hospital, one health promotion hospital, and three district

hospitals. The inclusion criteria for this study were: 1) Thai ethnicity, 2) admitted to one of 5 hospital-based postpartum wards, 3) aged 15-19 years at the time of delivery (regardless of parity, route of delivery, gestational age at delivery, live birth or still birth, multiple gestations, or extrauterine pregnancy), 4) more than 24 hours postpartum, 5) normal vital signs, and 6) agreed to participate in this study. Exclusion criteria were: 1) HIV infection, 2) postpartum complications, such as hemorrhage, infection, pre-eclampsia, eclampsia, severe pain, or traumatic disorder, or 3) psychotic conditions.

The study had two phases. Phase 1, a small pilot study of 10 participants was conducted to determine if the measures were clearly worded and understandable to the participants. Cronbach's alpha coefficient for the contraceptive self-efficacy scale (CSES) was 0.80 which was acceptable for this study (Devellis, 2012). Phase 2 consisted of the main study which had an additional 160 participants. Construct validity showed a positive correlation between CK and CSE, indicating that as knowledge increased so did self-efficacy.

Before the study started, participants aged 15 – less than 18 were asked to sign an assent form and participants aged 18 – 19 years were asked to sign a consent form. Then they were asked to respond to the 34 - item socio-demographic questionnaire, the 26 - item contraceptive knowledge test (CKT), and the 18 - item CSES. Study activities for each participant took appropriately 45 minutes to complete. The institutional review boards at the University of Washington and the Faculty of Medicine Chiang Mai University approved the study.

Socio-demographic data collected included age, educational level, and other demographic and characteristic variables. The CKT was adapted from “the Demographic and Health Surveys (DHS) model woman questionnaire” (Demographic and Health Surveys Program, 2015). The CKT was adapted for use with the Thai population. The original 9 items were used and

additional 17 items were added based on the literature. The test measured each individual's knowledge of reproductive-related anatomy and physiology, signs of pregnancy, effectiveness and usage of oral contraception, injectable contraception, tubal resection, male condom, female condom, intrauterine device, and implants. The participants responded to a choice of "true," "false," or "do not know." Each correct answer was given one point, whereas "false" and "do not know" answers were awarded no points. Total scores ranged from 0 - 26, with higher scores representing better contraceptive knowledge than the lower scores. Scores lower than 15 indicate low contraceptive knowledge.

The CSES was originally developed by Levinson, Wan, and Beamer (1998) and was used to gain information about personal, interpersonal, and environmental variables in obtaining contraception. As cited in Heinrich (1993), Levinson developed the CSE scale based on the Social Cognitive Theory and indicated that the 18-item scale measures 4 factors: conscious acceptance of sexual activity by planning for it, assumption of responsibility for the direction of sexual activity and for using contraception, assertiveness in preventing sexual intercourse in an involved situation, and positively experiencing sexual feelings. For this study, four items of CSES were modified based on contraceptive used among Thai adolescents. Participants rated each item on a five point Likert-scale ranging from 1 to 5, 1 = not at all true of me and 5 = completely true of me. The scoring directions required that items 2, 5, 6, 8, 9, 11, 12, 14, and 15 be reverse-coded, so that 1 = completely true of me and 5 = not at all true of me. Total scores ranged from 18 - 90 with higher scores indicating higher contraceptive self-efficacy. Scores below 56 out of 90 indicated low contraceptive self-efficacy.

## **Analysis**

### **Descriptive Analysis**

Data were analyzed using SPSS for Windows version 22. Data were examined for accuracy of data entry, outliers, linearity, and normality. All questionnaires were completed without missing data. Frequency, means, percentage, and standard deviations were used to describe socio-demographic characteristics of the participants, CK, and CSE. The CKT was obtained by summing the response scores across the 26 relevant items. A total score of CSES was obtained by summing the rating responses across the 18 relevant items.

### **Multiple linear regression analysis**

The final analysis involved applying multiple linear regression with sequential entry to analyze the relationships of participant socio-demographic characteristics with CK and CSE, as well as the relationship between CK and CSE. Sequential predictor entry allows for testing incremental improvement in model fit as predictors are added to the model (Tabachnick & Fidell, 2007).

Although the data were from adolescent postpartum mothers receiving health care services at 5 hospitals, there was no potential nesting issue to deal with. Because all pregnant women in Thailand are guaranteed care under government health insurance schemes, they can register for health services at the health facility of their choice. Pregnant women may receive antenatal care from the designated hospital near their home and receive care from another health care facility when they are in labor (Srithamrongsawat, Jongudomsuk, & Suntorntham, 2015). Therefore, they can move around if needed. Further, postpartum mothers usually spend 2 - 3 days in the postpartum wards, and it is assumed that the hospital environments and services have no impact on adolescents' characteristics, CK, and CSE.

Initially, a zero-order correlation was created to test for potential multicollinearity, looking for X-X predictor-predictor relationships that were too high  $\geq .90$  (Tabachnick & Fidel, 2007). In this study, the X-X predictor-predictor relationships were less than .90, and no multicollinearity problem was identified. The interesting categorical variables in socio-demographic characteristics data were transformed into dummy-coded (1, 0), for example level of education, family status, marital status, and attending contraceptive class. Age, distance from home to hospital, and number of children were in original units measurement.

With regards to multiple linear regression analysis, the sample size was adequately powered for this analysis. Predictors were variables that showed significant relationships with dependent variables (CSE and CK) and another predictor. AgeXChild (age by number of children) and AgeXCollege (age by college education) were the interaction terms for this study. Level of education, family status, marital status, and attending contraceptive class were transformed into effect-coded. Age, distance from home to hospital, and number of children were standardized. Block 1 included main effects and block 2 included all interactions with age. The multiple linear regression models were used to predict the binary outcomes, CSE and CK, as follows:

$$\begin{aligned} \text{Outcome of CSE} = & b_0 + b_1 * ZCK + b_2 * ZAge + b_3 * ZDistance + b_4 * ZChild + b_5 * VocaEff + \\ & b_6 * CollegeEff + b_7 * OtherEff + b_8 * PartnerEff + b_9 * MarriageEff \\ & + b_{10} * AttendEff \dots \dots \dots \text{Block 1} \\ & + b_{11} * ZAge * ZChild + b_{12} * ZAge * CollegeEff \dots \dots \dots \text{Block 2} \end{aligned}$$

$$\begin{aligned} \text{Outcome of CK} = & b_0 + b_1 * ZAge + b_2 * ZDistance + b_3 * ZChild + b_4 * VocaEff + b_5 * CollegeEff + \\ & b_6 * OtherEff + b_7 * PartnerEff + b_8 * MarriageEff + b_9 * AttendEff \dots \dots \text{Block 1} \\ & + b_{10} * ZAge * ZChild + b_{11} * ZAge * CollegeEff \dots \dots \dots \text{Block 2} \end{aligned}$$

## Results

### Descriptive

Participants had a mean age of  $17.8 \pm 1.4$  years. The majority of adolescent mothers (84.4%) were Buddhists, 74.4% had low education, and almost all of the participants (97.5%) lived with family. The majority of participants (86.9%) lived far from the hospital within 25 kilometers (km), 46.9% of participants were employed and around 83.1% of adolescent mothers had a low monthly income. With regards to marital status, living with partners accounted for 83.8% and a vast majority of participants (98.1%) planned to take contraceptive immediately after birth. It was observed that 69.4% of participants had heard about contraception from their healthcare providers, 66.9% had ever attended a formal contraceptive class, and around half knew of the side effects of contraception. Most participants (85%) reported having no live children, and 83.1% of participants had their partners accompany them to the antenatal clinic.

The majority (75%) of adolescent mothers reported drinking before and during some of their pregnancy, approximately 20.6% of participants had smoked in their lifetime, and only 1.3% of adolescent mothers had used illegal drugs. With regards to depressive symptoms, 36.9% of adolescent mothers had a history of depressive symptoms, and only 1.3% of participants experienced depressive symptoms after this current birth. Of the total number of adolescent mothers ( $n = 160$ ), 10% were abused by their parents or relatives and 16.9% were abused by their partners (Table 2.1).

Table 2.1

*Demographics, Socioeconomic, and Reproductive Characteristics*

Characteristics	No.	%
Age (mean = 17.82, SD = 1.36, median = 18.00)		
15 years	15	9.4
16 years	15	9.4
17 years	29	18.1
18 years	26	16.3
19 years	75	46.9
Education		
Compulsory formal education	119	74.4
Vocational degree	29	18.1
College	12	7.5
Religion		
Buddhism	135	84.4
Other	25	15.6
Family status		
Living alone	2	1.3
Living with other (friend and/or employer)	2	1.3
Living with partner	156	97.5
Distance from home to hospital (kilometers) (mean = 14.57, SD = 16.20)		
1-25	139	86.9
26-50	17	10.6
51-100	4	2.5
Employment status		
Unemployed	54	33.8
Employed	75	46.9
Self-employed	31	19.4
Income		
Low	133	83.1
Average	16	10.0
High	11	6.9
Marital status		
Single (not dating/ not living together)	26	16.3
Living with partner/spouse	134	83.8
Plan contraception after delivery		
Yes	157	98.1
Told by providers about contraception		
Yes	111	69.4
Attending contraceptive educational class		
Yes	107	66.9
Told by providers about side effect		
Yes	88	55.0

Characteristics	No.	%
Have lived children before current pregnancy		
Yes	24	15.0
Partner accompanied to antenatal clinic		
Yes	133	83.1
Drank alcohol		
Yes	120	75.0
Smoking		
Yes	33	20.6
Drug use		
Yes	2	1.3
History of depressive symptom (s)		
Yes	59	36.9
Current depressive symptom (s)		
Yes	2	1.3
Abused by parents or relatives		
Yes	16	10.0
Abused by boyfriend or partner		
Yes	27	16.9

### Correlations

Means, standard deviation, and zero-order correlations among the interesting variables were given in Table 2.2. For CSE outcome, CK was significantly positively related with CSE which indicated that participants with high CK were more likely to have high CSE ( $r = 0.29, p < 0.01$ ).

For CK outcome, zero-order correlations showed similar results. Age, number of children, college education, and attending contraceptive class were significantly positively related with CK, indicating that participants of older age were more likely to have high CK ( $r = 0.25, p < 0.01$ ), as were more number of children ( $r = 0.20, p < 0.05$ ), college education ( $r = 0.21, p < 0.01$ ), and attending contraceptive class ( $r = 0.28, p < 0.01$ ). In contrast, the long distance from home to hospital was significantly negatively associated with CK ( $r = -0.17, p < 0.05$ ), indicating that participants living far from a hospital were more likely to have lower CK than those who lived near a hospital.

Table 2.2

*Descriptive and Zero-Order Correlations of Contraceptive Self-Efficacy and Contraceptive Knowledge with Selected Socio-Demographic Characteristics among a Sample of 160 Adolescent Postpartum Mothers Aged 15-19*

Measures	<i>M</i>	<i>(SD)</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Outcomes															
1. Contraceptive self-efficacy	60.77	(9.26)	--												
2. Contraceptive knowledge	15.65	(3.74)	.29**	--											
Block 1 Predictors															
3. Age	17.82	(1.36)	.04	.25**	--										
4. Distance	14.56	(16.20)	-.02	-.17*	-.11	--									
5. Children	0.16	(0.40)	-.03	.20*	.19*	-.08	--								
6. Vocation	0.18	(0.39)	.04	.11	.22**	-.01	-.03	--							
7. College	0.08	(0.26)	.10	.21**	.25**	-.03	-.12	-.13	--						
8. Live with others	0.01	(0.11)	-.05	-.04	.10	-.06	.10	-.05	-.03	--					
9. Live with partner	0.98	(0.16)	.09	.01	-.14	.07	-.04	.08	-.26**	-.70**	--				
10. Marital	0.84	(0.37)	.09	.02	.05	.02	.14	.08	-.07	-.26**	.36**	--			
11. Attend class	0.67	(0.47)	.15	.28**	.02	-.01	-.11	.26**	-.05	-.04	.06	-.09	--		
Block 2 Predictors															
12. ZAgeXZChild	--	--	-.04	.06	-.13	.00	.48**	-.05	-.19*	.07	.00	.03	.00	--	
13. ZAgeXCollege Eff	--	--	.02	-.14	-.85**	.09	.24**	-.11	.20*	-.13	.04	-.09	.00	.03	--

*Note.* *N*= 160. Block 1: Contraceptive self-efficacy was in scores; Contraceptive knowledge was in scores; Age was in years; Distance was in kilometers; Children were in number; Vocation dummy-coded with 1=vocation, 0=other; College dummy-coded with 1=college, 0=other; Live with others dummy-coded with 1=live with friend/employee, 0=other; Live with partner dummy-coded with 1=live with partner, 0=other; Marital dummy-coded with 1=marriage/live with partner, 0=other; Attend class dummy-coded with 1=attend, 0=not attend. Block 2: ZAge was standardized age; ZChild was standardized number of child; CollegeEff Effect-coded with +1=college, 0=vocation, -1=compulsory education. \**p* < .05, \*\**p* < .01

### Regression models

A multiple linear regression with sequential predictor entry was used to predict CSE and CK outcomes. As shown in Table 2.3, CK, age, distance, number of children, vocation education, college education, living with others, living with partner, marital status, attending contraceptive class, and interaction terms ZAgeXZChild and ZAgeXCollegeEff were entered in the model. The results showed that the main effects of CK, age, distance, number of children, vocation education, college education, live with others, live with partner, marital status, and attending contraceptive class together in the first block accounted for significant variance in CSE,  $R^2 = 0.11$  (Adjusted  $R^2 = 0.05$ ),  $F(10, 149) = 1.89$ ,  $p = 0.05$ . In Block 2, the interaction terms (age by number of children and age by college education) did not account for significant variation in the outcome CSE,  $R^2_{\text{change}} < 0.01$ ,  $F_{\text{change}}(2, 147) = 0.07$ ,  $p = 0.93$  ( $R^2_{\text{total}} = 0.11$  and  $R^2_{\text{adjusted}} = 0.04$ ).

Results from the final block with all predictors entered in the model showed that the average participant CSE was 57.62 ( $SE = 3.74$ ), holding all other variables constant,  $t(147) = 15.40$ ,  $p < 0.01$ . CK uniquely predicted CSE, holding all else constant, ( $b = 2.59$ ,  $SE = 0.83$ ,  $t(147) = 3.14$ ,  $p < 0.01$ ,  $sr^2 = 0.06$ ). For every standard deviation increase in CK, CSE was predicted to increase by 2.59 points, holding all else constant.

Table 2.3

*Model Results for Contraceptive Self-Efficacy*

	Block 1					Block 2				
	$R^2$ change	$R^2$ total	$R^2$ adj	$b$	$sr^2$	$R^2$ change	$R^2$ total	$R^2$ adj	$b$	$sr^2$
Model Fit	0.11*	0.11*	0.05			0.00	0.11	0.04		
Coefficients										
Intercept				58.21**					57.62**	
ZCK				2.58**	0.06				2.59**	0.06
ZAge				-0.34	0.00				0.51	0.00
ZDistance				0.19	0.00				0.20	0.00
ZChildren				-0.72	0.01				-0.64	0.00
VocationEff				-0.95	0.00				-0.67	0.00
CollegeEff				1.97	0.01				0.10	0.00
Live with othersEff				2.14	0.00				2.26	0.00
Live with partnerEff				2.50	0.00				2.41	0.00
MaritalEff				1.05	0.01				1.07	0.01
Attend classEff				0.66	0.00				0.67	0.00
ZAgeXZChild									-0.20	0.00
ZAgeXCollegeEff									0.96	0.00

*Note.*  $N = 160$ . Block 1  $F$ -change test  $df = 10, 149$ ; Block 2  $df = 2, 147$ . ZCK was standardized contraceptive knowledge; ZAge was standardized age; ZDistance was standardized distance from hospital; ZChildren was standardized number of children; Vocation effect-coded with 1=vocation, 0=college, -1=compulsory education; College effect-coded with 1=college, 0=vocation, -1=compulsory education; Live with others effect-coded with 1=live with friend/employee, 0=live with partner, -1=live alone; Live with partner effect-coded with 1=live with partner, 0=live with friend/employee, -1=live alone; Marital effect-coded with 1=marriage/partnered, -1=single/no partnered; Attend class effect-coded with 1=attend, -1=not attend.

\* $p < .05$ , \*\* $p < .01$

For the CK model in Table 2.4, results showed that the main effects of age, distance, number of children, vocation education, college education, living with others, living with partner, marital status, and attending contraceptive class together in Block 1 accounted for significant variance in CK,  $R^2 = 0.24$  (Adjusted  $R^2 = 0.19$ ),  $F(9, 150) = 5.25$ ,  $p < 0.01$ . In the second block the interaction terms (age by number of children and age by college education) did not account for significant variation in the outcome,  $R^2_{\text{change}} < 0.01$ ,  $F_{\text{change}}(2, 148) = 0.12$ ,  $p = 0.89$  ( $R^2_{\text{total}} = 0.24$  and  $R^2_{\text{adjusted}} = 0.18$ ).

Results from the final block, with all predictors entered in the model, showed that the average participant CK was 15.18 points ( $SE = 1.39$ ), holding all other variables constant,  $t(148) = 10.90$ ,  $p < 0.01$ . Number of children uniquely predicted CK, holding all else constant ( $b = 0.83$ ,  $SE = 0.33$ ,  $t(148) = 2.51$ ,  $p = 0.01$ ,  $sr^2 = 0.03$ ). For every standard deviation increase in the number of children, CK was predicted to increase by 0.83 points, holding all else constant. College education uniquely predicted CK, with college education participant outperforming compulsory education by an estimated average of 5.42 point (double the coefficient since it was effect-coded), holding all else constant ( $b = 2.71$ ,  $SE = 1.32$ ,  $t(148) = 2.06$ ,  $p = 0.04$ ,  $sr^2 = 0.02$ ). Attending contraceptive class also uniquely predicted CK, holding all else constant ( $b = 1.18$ ,  $SE = 0.30$ ,  $t(148) = 3.96$ ,  $p < 0.01$ ,  $sr^2 = 0.08$ ). Specifically, with participants attending contraceptive class outperforming participants not attending class by an estimated average of 2.36 points (double the coefficient since it was effect-coded), holding all else constant.

Table 2.4

*Model Results for Contraceptive Knowledge*

	Block 1					Block 2				
	$R^2$ change	$R^2$ total	$R^2$ adj	$b$	$sr^2$	$R^2$ change	$R^2$ total	$R^2$ adj	$b$	$sr^2$
Model Fit	0.24**	0.24**	0.19			0.00	0.24	0.18		
Coefficients										
Intercept				14.86**					15.18**	
ZAge				0.49	.01				0.04	.00
ZDistance				-0.50	.02				-0.51	.02
ZChildren				0.85**	.05				0.83*	.03
VocationEff				-0.96	.01				-1.11	.02
CollegeEff				2.21**	.04				2.71*	.02
Live with othersEff				-0.55	.00				-0.60	.00
Live with partnerEff				1.41	.01				1.45	.01
MaritalEff				-0.04	.00				-0.05	.00
Attend classEff				1.19**	.08				1.18**	.08
ZAgeXZChild									0.06	.00
ZAgeXCollegeEff									-0.50	.00

*Note.*  $N=160$ . Block 1  $F$ -change test  $df=9,150$ ; Block 2  $df=2,148$ . ZAge was standardized age; ZDistance was standardized distance from hospital; ZChildren was standardized number of children; Vocation effect-coded with 1=vocation, 0=college, -1=compulsory education; College effect-coded with 1=college, 0=vocation, -1=compulsory education; Live with others effect-coded with 1=live with friend/employee, 0=live with partner, -1=live alone; Live with partner effect-coded with 1=live with partner, 0=live with friend/employee, -1=live alone; Marital effect-coded with 1=marriage/partnered, -1=single/no partnered; Attend class effect-coded with 1=attend, -1=not attend.

\* $p < .05$ , \*\* $p < .01$

## Discussion

This study assessed the relationships of CSE and CK with socio-demographic characteristics among Thai adolescent postpartum mothers, as well as the relationship between CSE and CK, by using a multiple linear regression analysis.

### Contraceptive self-efficacy

This study confirmed that participants who had better CK were more likely to have higher CSE than those who had lower CK. Among age, distance from home to the hospital, number of children, vocation education, college education, family status, marital status, experience of attending a contraceptive class, and the interaction terms created, only CK predicted CSE.

Sexual health programs related to contraception could help increase contraceptive self-efficacy in male and female adolescents (Jennings, Howard, & Perotte, 2014; Lou, Chen, Yu, Lin, & Li, 2010). A study found that school-based adolescent pregnancy prevention programs that included contraceptive knowledge, increased self-confidence in using birth control among ninth grade students in 21 suburban public high schools in California (LaChausse, 2016). A different study implemented a sexual health program related to contraception with 1,036 youths in 44 residential group homes in California and successfully improved their contraceptive self-efficacy (Oman, Vesely, Green, Clements-Nolle, & Minggen, 2018)

To improve CSE in school-aged adolescents, contraceptive knowledge programs must have classroom teachers trained in the key components of lessons and students should be given time for practicing contraceptive communication skills and demonstrating contraceptive use openly. To reach female adolescents who are not enrolled in school, contraceptive information should be available via social network applications and mobile phones because technology and social media are an increasingly main communication route among adolescents. Dunne,

McIntosh, and Mallory (2014) found that Facebook pages, the internet, animation, CD-ROMs, and technology-based intervention containing contraceptive information helped to increase self-efficacy for the use of condoms, and self-efficacy regarding safe sex.

This current study found that only CK predicted CSE. The model R squared was low because human behaviors are complicated, other factors, such as peers and cultural norms, gender roles, and social support, may influence the level of CSE in individuals (Villarreal, Wiley, Housman, & Martinez-Ramos, 2016). It is also possible that CSE may be related to cultural differences, contraceptive skills by self or partner, negotiation skills, and the ability to persuade a partner to use contraception, such as condoms (Asante & Doku, 2010). Physical and psychological well-being also affect adolescents' perceived self-efficacy. Adolescents' health condition during postpartum period might affect their response on the CSE scale.

### **Contraceptive knowledge**

Participants with greater life experience had better CK. Participants who were previously pregnant, attended college or attended a contraceptive education class had higher CK than other participants.

Participants who had children before this current pregnancy had better CK than those who had not because having previous children exposed adolescent mothers to the healthcare system where they received contraceptive education. Participants with more education were more likely to have high CK because of greater exposure to education about sexuality and contraception in primary school and/or secondary school (Department of Health, 2016). A number of resources are available to adolescents who have graduated from high school. Higher educational institutions and community health centers provide contraceptive information through a variety of outlets, such as Safe Sex Training Program, Youth Friendly Health Service (Chiang Mai

Provincial Health Office, 2017), handbook for adolescent reproductive and sexual health (through social media) (Department of Health, 2015), as well as Hotline 1300 One Stop Crisis Center. It is also likely that college educated participants with more experience with sexual relationships are more likely to use contraception and seek information about contraceptive use (Sommer, 2015).

Participants who attended a contraceptive class during pregnancy were more likely to have higher CK than those who did not attend the class. Self-care education during the antenatal visit often included information about contraceptives for pregnant adolescents. Géssica Kyvia Soares de et al. (2017) confirmed that most pregnant adolescents knew about the types of contraceptive methods from antenatal visits.

Surprisingly, the multiple regression models showed no significant relationships for CSE and CK with age, family status, marital status, and a distance from the hospital.

With regards to age, older participants might seek CK and have higher CSE than younger women. Hanson, McMahon, Griese, and Kenyon (2014) stated that older women might be more aware and more responsible for protecting themselves against pregnancy because they realized that they would be carrying the pregnancy, not a male partner.

Adolescent mothers who lived with their partners and families might have different CK and CSE from those who live alone or in the absence of partners. Adolescents who lived far from the hospital might find it difficult to access contraceptive knowledge and contraceptive resources. Sommer (2015) found that the housing environment had a major impact on adolescent' health. A poor physical environment, including living far from the hospital, could weaken contraceptive knowledge.

### **Limitations**

There were four main limitations in this study: limited generalizability, self-report bias, unknown reasons of why the participants used or unused contraception, and studying some elements in personal factor.

The biggest limitation was generalizability. The results of the study were limited to adolescent postpartum mothers who met the study's inclusion criteria. However, the researcher intended to enhance the generalizability of this study through several strategies.

First, the researcher recruited as many as participants during a 6-month period, in order to increase generalizability and statistical power. Second, the participants were from 5 hospital-based settings in which the environment and demographic characteristics of the participants varied. This resulted in a heterogeneous sample from each of the hospital. Third, Polit and Beck (2010) stated that knowledge does not come from testing new instruments or inventing new constructs, but can be obtained through confirmation of other findings. This study assessed CK and CSE of the different types of people, contexts, and times, which could strengthen the generalizability. Fourth, the researcher collected and analyzed the data and so was very knowledgeable about the data and was able to confirm the accuracy of the analysis and conclusions. Lastly, information about the participants, such as their socio-demographic information and social characteristics were included, in order to provide an understanding of the context of the study.

Another limitation was that all data were self-reported. Because of cultural norms and social acceptability of sexual disclosure, adolescent postpartum mothers might underreport the issues related to contraception and sexual behaviors. Furthermore, postpartum conditions, such as physical discomfort, fatigue, and perineal pain might affect the participant's response during

the interview. Postpartum mothers might respond differently after just having given birth than they might have later on in the postpartum period. To solve this problem, the researcher collected the data and looked at the data for specific cases. If the participants were reluctant to answer the questions, the researcher would generate conversation to support the participants' response.

The third limitation was that this cross-sectional study cannot imply causality or reflect a deep insight and emotions of individuals' experiences. The results of the study only explained the socio-demographic characteristics, CK, CSE, and relationships of CK and CSE with the interesting predictors.

Finally, the SCT embraces an interactional model of causation in which environmental events, personal factors, and behavior all operate as interacting determinants of each other (Bandura, 1986). A person who has a high level of self-efficacy will seek well-being and desired outcomes by exercising 3 modes of personal agency: individual, collective, and proxy agencies (Bandura, 2006). This study only focused on some elements in personal agency (see Figure 1) and did not explore other variables that might affect CSE of adolescent postpartum mothers.

### **Implications**

Future studies should survey a larger sample with more geographical diversity and include female adolescents' needs and desires about contraception. The use of a clustered randomized control trial might provide more rigorous evidence related to the effects of the interesting predictors on CK and CSE levels. A study exploring the use of current technology to improve CK and CSE in adolescent mothers is important. Adolescents may enjoy using and have easy access to this type of media. The use of social media can reach adolescent mothers who are in schools and outside the school settings.

Health facilities have to ensure adolescent privacy and confidentiality. Unmarried adolescents may feel embarrassed to discuss contraceptives with the providers. Adolescents have basic rights to information about contraceptive methods. Information provided should include the effectiveness of the contraceptive methods, signs and symptoms that would necessitate a return to see the physician, and the return to fertility after discontinuing the method used. The providers need to create a safe environment for discussion and clarify options and choices for the adolescents. Contraceptive communication should be comfortable and familiar to adolescents. A telephone appointment for contraceptive discussion may be suitable for adolescents who are studying in schools.

With regards to social pressures, young mothers need the supports of her partner and family. Healthcare providers should help increase their sense of responsibility and try to improve interpersonal relationships between girls and their partners and families.

**Conflict of interest**

There are no conflicts of interests to declare.

### References

- Asante, K. O., & Doku, P. N. (2010). Cultural adaptation of the condom use self efficacy scale (CUSES) in Ghana. *BMC Public Health, 10*, 227-233.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, Connecticut: Information Age Publishing.
- Bandura, A. (1986). *Social foundations of thought and action*. New Jersey: Prentice-Hall.
- Chaovisitsaree, S., Noi-um, S., & Kietpeerakool, C. (2012). Review of postpartum contraceptive practices at Chiang Mai University Hospital: Implications for improving quality of service. *Medical Principles and Practice, 21*(2), 145-149. doi:10.1159/000333557
- Chiang Mai Provincial Health Office. (2018). *Provincial inspeculate report 2018*. Chiang Mai, Thailand: Health Promotion Group.
- Chiang Mai Provincial Health Office. (2017). *Provincial inspeculate report 2017*. Chiang Mai, Thailand: Health Promotion Group.
- Demographic and Health Surveys Program. (2015). *Demographic and health surveys model woman's questionnaire*. Retrieved from [http://dhsprogram.com/pubs/pdf/DHSQ7/DHS7\\_Womans\\_QRE\\_EN\\_12Oct2015\\_DHSQ7.pdf](http://dhsprogram.com/pubs/pdf/DHSQ7/DHS7_Womans_QRE_EN_12Oct2015_DHSQ7.pdf)
- Department of Health (2016). *Act for prevention and solution of the adolescent pregnancy problem, B.E. 2559 (2016)*. Bangkok, Thailand: Minister of Publish Health.
- Department of Health (2015). *Guideline for prevention and solution of teenage pregnancy problem*. Bangkok, Thailand: Agricultural Cooperative Printing of Thai.
- DeVellis, R. F. (2012). *Scale development: Theory and applicatiions* (3<sup>rd</sup> ed.). Los Angeles, CA: SAGE.

- Dunne, A., McIntosh, J., & Mallory, D. (2014). Adolescents, sexually transmitted infections, and education using social media: A Review of the literature. *Journal for Nurse Practitioners, 10*(6), 401-408. doi:10.1016/j.nurpra.2014.03.020
- Edmeades, J. (2008). The legacies of context: Past and present influences on contraceptive choice in Nang Rong, Thailand. *Demography, 45*(2), 283-302.
- Géssica Kyvia Soares de, L., Amuzza Aylla Pereira dos, S., Jovânia Marques de Oliveira, E. S., Isabel, C., Suzyenney Rodrigues, C., & Daniela Cristina da Silva, F. (2017). Self-care of adolescents in the puerperal period: Application of the orem theory. *Journal of Nursing UFPE / Revista de Enfermagem UFPE, 11*(10), 4217-4225. doi:10.5205/reuol.10712-95194-3-SM.1110sup201727
- Hanson, J. D., McMahon, T. R., Griese, E. R., & Kenyon, D. B. (2014). Understanding gender roles in teen pregnancy prevention among American Indian youth. *American Journal of Health Behavior, 38*(6), 807-815. doi:10.5993/AJHB.38.6.2
- Haque, M. R., & Soonthorndhada, A. (2009). Risk perception and condom-use among Thai youths: Findings from Kanchanaburi demographic surveillance system site in Thailand. *Journal of Health, Population, and Nutrition, 27*(6), 772-783.
- Heinrich, L. B. (1993). Contraceptive self-efficacy in college women. *Journal of Adolescent Health, 14*(4), 269-276.
- Ip, W. Y., Sin, L. L., & Chan, D. S. (2009). Contraceptive self-efficacy and contraceptive knowledge of Hong Kong chinese women with unplanned pregnancy. *Journal of Clinical Nursing, 18*(17), 2416-2425. doi:10.1111/j.1365-2702.2009.02829.x

- Jennings, J. M., Howard, S., & Perotte, C. L. (2014). Effects of a school-based sexuality education program on peer educators: The teen PEP model: Prevention education program. *Health Education Research, 29*(2), 319-329. doi:10.1093/her/cyt153
- Jusitthipraphai, T., Nirattharadorn, M., & Suwannarurk, K. (2015). The effects of promoting self-efficacy program on the oral contraceptive used behavior among adolescent mothers. *Journal of the Medical Association of Thailand, 98*(5), 444-450.
- Khumsaen, N., & Gary, F. A. (2009). Determinants of actual condom use among adolescents in Thailand. *Journal of the Association of Nurses in AIDS Care, 20*(3), 218-229. doi:10.1016/j.jana.2008.12.006
- LaChausse, R. G. (2016). A Clustered randomized controlled trial of the positive prevention plus adolescent pregnancy prevention program. *American Journal of Public Health, 106*, S91-S96. doi:10.2105/AJPH.2016.303414
- Lanjakornsiripan, W., Amnatbuddee, S., Seejorn, K., Werawatakul, Y., Kleebkaow, P., Komwilaisak, R., & Luanratanakorn, S. (2015). Contraceptive practices and pregnancy intendedness among pregnant adolescents. *International Journal of Women's Health, 7*, 315-320. doi:10.2147/ijwh.s77077
- Levinson, R. A., Wan, C. K., & Beamer, L. J. (1998). The contraceptive self-efficacy scale: Analysis in four samples. *Journal of Youth and Adolescence, 27*(6), 773-793.
- Lou, J. H., Chen, S. H., Yu, H. Y., Lin, Y. C., & Li, R. H. (2010). Sexual cognitive predictors of sexual communication in junior college adolescents: Medical student perspectives. *Journal of Nursing Research, 18*, 290-298.

- Meechamnan, C., Fongkaew, W., Chotibang, J., & McGrath, B. B. (2014). Do Thai parents discuss sex and AIDS with young adolescents? A qualitative study. *Nursing & Health Sciences, 16*(1), 97-102 106p. doi:10.1111/nhs.12072
- Oman, R. F., Vesely, S. K., Green, J., Clements-Nolle, K., & Minggen, L. (2018). Adolescent pregnancy prevention among youths living in group care homes: A cluster randomized controlled trial. *American Journal of Public Health, 108*, S38-S44. doi:10.2105/AJPH.2017.304126
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9<sup>th</sup> ed.). Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.
- Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies, 47*(11), 1451-1458. doi:10.1016/j.ijnurstu. 2010.06.004
- Schunk D. H., & Meece, J. L. (2006). Self-efficacy development in adolescence. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 71-96). Greenwich, Connecticut: Information Age Publishing.
- Sommer, M. (2015). Addressing structural and environmental factors for adolescent sexual and reproductive health in low- and middle-income countries. *American Journal of Public Health, 105*(10), 1973-1981 1979p. doi:10.2105/AJPH.2015.302740
- Sriprasert, I., Chaovisitsaree, S., Sribanditmongkhol, N., Sunthornlimsiri, N., & Kietpeerakool, C. (2015). Unintended pregnancy and associated risk factors among young pregnant women. *International Journal of Gynaecology and Obstetrics, 128*(3), 228-231. doi:10.1016/j.ijgo. 2014.09.004

Tabachnick, B. G. & Fidell, L. S. (2007). *Using multivariate statistics* (5<sup>th</sup> ed.). Boston, MA: Pearson Education.

Thailand Bureau of Reproductive Health. (2014). *Statistics on adolescent births, Thailand 2013*. Bangkok: The War Veterans Organization of Thailand under Royal Patronage of His Majesty the King.

United Nations Population Fund Thailand Country Office. (2014). *The state of Thailand' population 2013: Motherhood in childhood facing the challenge of adolescent pregnancy*. Retrieved from [http://countryoffice.unfpa.org/thailand/drive/ MotherhoodinChildhood.pdf](http://countryoffice.unfpa.org/thailand/drive/MotherhoodinChildhood.pdf)

Villarreal, K. M., Wiley, D. C., Housman, J., & Martinez-Ramos, G. (2016). Attitudes about partner communication regarding contraceptive use among hispanic male college students. *Journal of American College Health, 64*(4), 279-287. doi:10.1080/07448481.2015.1117467

Viseskul, N., Fongkaew, W., Settheekul, S., & Grimes, R. M. (2013). Factors related to sexual self-efficacy among Thai youth living with HIV/AIDS. *Journal of the International Association of Providers of AIDS Care, 00*(0), 1-5. doi:10.1177/ 2325957413488188

**Paper 3: Exploring Contraceptive Knowledge and Contraceptive Self-Efficacy  
among Thai Adolescent Mothers**

The prevalence of repeat adolescent pregnancy is a reproductive health service challenge. Repeat pregnancy in adolescents may imply that adolescent mothers are insufficiently educated about the need to start using birth control immediately after birth (United Nations Population Fund Thailand Country Office, 2014). Wilson, Samandari, Koo, and Tucker (2011) indicated that adolescent repeat pregnancy partially results from insufficient contraceptive knowledge and ineffective contraceptive use among adolescent mothers.

Pregnancy in adolescents may cause maternal anemia, cephalopelvic disproportion, cesarean sections, operative delivery, and postpartum complications. Infants resulting from repeat adolescent pregnancies are more likely to have low birth weight, structural congenital abnormalities, and the risk of still birth and neonatal death are high (Areemit et al., 2012; Chandra-Mouli, McCarraher, Phillips, Williamson, & Hainsworth, 2014; Chantrapanichkul & Chawanpaiboon, 2013).

A study in Thailand found that mothers aged 15 to 19 years were 2.6 times more likely to have newborns with low birth weight than mothers aged 20 to 34 years (Thongto, 2011). Adolescent mothers face social stigma for repeating grades and dropping out of school. They also receive physical or verbal abuse. Many have had to raise their babies as a single parent and have decreased earning potential (Dallas, 2013). Even those who had the help of the father, studies have shown that a good number of these relationships end within 2.5 years after the birth of the child. Outcomes of adolescent mothers were not good as many depended on their parents, did not finish high school, and were unsatisfied with their income and occupation (Zeck, Bjelic-

Radisic, Haas, & Greimel, 2007). Pregnant adolescents who do not want to carry their pregnancies to term may have unsafe abortions as legal abortions are only available under very narrow circumstances. Jeng (2012) found that 23.8% of Thai pregnant women who had abortions were aged 15-19 years.

Adolescent repeat pregnancy rates in Thailand are increasing. Between 2010 and 2014, the rate increased from 11.3% to 12.8% (Bureau of Reproductive Health, 2015) and slightly decreased to 12.2% in 2016 (Bureau of Reproductive Health, 2017). These numbers were higher than the national target rate of less than 10% for repeat pregnancy in adolescence. In Chiang Mai Province, the repeat pregnancy rates among adolescents aged 15-19 years were 12.63% and 18.20% in 2016 and 2017, respectively (Chiang Mai Provincial Health Office, 2018). Repeat pregnancy rates in adolescence in Chiang Mai were still high.

The Chiang Mai Provincial Health Office (2017) reported that only 20.57% of adolescent mothers in Chiang Mai used contraceptives. This number is well below the national target rate of 80% contraceptive use among adolescent mothers. In the Thai cultural context, the decision to use contraception is often dominated by the male partner. This is complicated by the feeling that condom use is a sign of distrust (Khumsaen & Gary, 2009). In Chiang Mai Province, 35.6% of pregnant women aged 15 - 24 years were not using any form of contraception at the time of conception due to concerns about adverse side effects and safety (Sriprasert, Chaovisitsaree, Sribanditmongkhon, Sunthornlimsiri, & Kietpeerakool, 2015). A previous study found that 14% of postpartum women had already had vaginal sexual intercourse before attending the routine 6-week postpartum clinic checkup where family planning practices and contraceptive choices are discussed (Chaovisitsaree, Noi-um, & Kietpeerakool, 2012). The delay in receiving information about contraception can cause rapid repeat pregnancy (defined as less than 24 months after index

birth or between previous delivery date and next conception) (Lemay, Cashman, Elfenbein, & Felice, 2007).

Avoiding childbearing and repeat pregnancy during adolescence will benefit adolescent girls by allowing them to decide on the spacing of future pregnancies, complete their education, and take advantage of work opportunities. The Thailand Ministry of Public Health recommends that adolescent mothers should space their pregnancies by at least two years, and preferably wait until they are 20 years old, which is consistent with recommendations from the World Health Organization and the United Nations Population Fund (United Nations Population Fund Thailand Country Office, 2014).

### **Conceptual framework**

This study was informed by the Social Cognitive Theory (SCT), which has self-efficacy as a core component (Schunk & Meece, 2006). Personal agency and its relation to contraceptive self-efficacy (CSE) were the main interests of this study. A person with a high level of self-efficacy will seek well-being and desired outcomes by exercising 3 modes of personal agency: individual, collective, and proxy agencies (Bandura, 2006).

Adolescents are at an earlier stage of biological, physiological, and mental development. Their previous experiences might impact their intention and contraceptive planning after delivery. Therefore, it was assumed that CSE occurring during the postpartum period was a new intention of the pre-action self-efficacy stage (Schwarzer & Luszczynska, 2006). CSE might be able to predict the level of intention and planning of contraceptive behavior, but not necessarily directly predict the behavior (Bandura, 1986).

The study used a mixed methods design to assess the relationship of CSE and contraceptive knowledge (CK) with socio-demographic characteristics of the adolescent

postpartum mothers. The quantitative findings are discussed in separate papers. This paper highlights the qualitative approach. The purpose of this paper was to report the results of a qualitative investigation of the adolescent mothers' perceptions, feelings, attitudes, and experiences regarding contraception.

### **Methods**

This mixed methods study used a convergent parallel design (Creswell, 2014) to assess the relationships of socio-demographic characteristics with CK and CSE and the relationship between CSE and CK of 170 Thai adolescent postpartum mothers (10 for pilot study, 160 for main study) between September 2017 and January 2018. The participants were from 5 hospitals in Chiang Mai Province, Thailand. The hospitals included one university hospital, one health promotion hospital, and three district hospitals.

The inclusion criteria for this study were: 1) Thai ethnicity, 2) admitted to one of 5 hospital-based postpartum wards, 3) aged 15-19 years at the time of delivery (regardless of parity, route of delivery, gestational age at delivery, live birth or still birth, multiple gestations, or extrauterine pregnancy), 4) more than 24 hours postpartum, 5) normal vital signs, and 6) agreed to participate in this study. Exclusion criteria were: 1) infected with HIV and 2) postpartum complications, such as hemorrhage, infection, pre-eclampsia, eclampsia, severe pain, or traumatic disorder, or 3) psychotic conditions.

The primary method was a quantitative cross-sectional approach and the secondary method was a qualitative approach. The cross-sectional approach used multiple linear regression to predict the variables of interest associated with CK and CSE. The qualitative data gained from face-to-face individual interviews of a sample of 10 adolescent mothers were used to compare, relate, and expand the quantitative findings.

The quantitative and qualitative data were analyzed separately, and then brought together to expand the results and to see whether or not the findings synchronized. Both quantitative and qualitative data provided different complementary information, including quantitative scores of CSE and CK and detailed descriptions through qualitative data collection procedures. Both methods used the concepts of CSE and CK, and were guided by the study's conceptual framework. Key informants interviewed during the qualitative collective process were drawn from the larger quantitative sample by using a purposive method. As stated by Creswell (2014), in comparison of two databases, the more the participants were similar, the better the comparison.

Participants aged between 15 and less than 18 years were asked to sign an assent form while participants aged 18 - 19 years signed a consent form. All study procedures were approved by the institutional review boards at the University of Washington and the Faculty of Medicine Chiang Mai University.

In-depth interviews were conducted concurrently with a quantitative approach, just after the participants voluntarily responded to the contraceptive knowledge test (CKT) and contraceptive self-efficacy scale (CSES), in a private room at the postpartum ward. The interview guide (Table 3.1) contained questions which were guided by the study's conceptual framework and the interviews were facilitated by the researcher. Probes were used to explore experiences of receiving CK, contraceptive use experiences, as well as the factors that promoted or inhibited the participants' ability to use contraceptives. All interviews were audio-recorded and notes were taken. The recordings were transcribed verbatim. The interviews were about 40 minutes long.

Table 3.1

*Interview Guide for Qualitative Approach*

<b>Interview guide</b>
Please tell me about your experience in using contraceptive methods. What do you think about using contraception after delivery? What did you learn about contraception? How did you learn about contraception? Please tell me about your plan for using or not using contraception after delivery. How did you make your decision on contraception? Whom did you listen to when you made your decision regarding contraception? What factors supported or inhibited you from making your decision on contraception?

**Analysis**

This paper presents the qualitative findings. Quantitative data results are fully described in paper 1 and 2. The qualitative data were analyzed deductively and was carried out concurrently with quantitative data analysis. When the quantitative data were analyzed statistically, the qualitative data were analyzed using a deductive category approach (deductive content analysis) (Drisko, 2016; Hsiu-Fang & Sarah, 2005; Tashakkori & Teddlie, 1998).

As shown in Table 3.2, deductive content analysis was used to code the qualitative data. This method was used to validate and extend the conceptual framework of this study, the relationships among CSE, CK, and socio-demographic characteristics of adolescent postpartum mothers. In the qualitative approach, the study explored the outcomes of CSE and its relationship with other variables that were supposed to occur in a theoretical population (Tashakkori & Teddlie, 1998).

Based on Drisko (2016), data analysis involved applying 5 steps of coding for a deductive approach: 1) developing preliminary coding (identifying “main and subcategories”) from the existing literature, 2) formulating coding definitions, 3) immersion, 4) identifying connections within the data and preliminary categories, and 5) checking formative reliability.

Table 3.2

*Coding Frame of a Deductive Content Analysis*

<b>Preliminary coding</b>	<b>Themes</b>	<b>Subthemes</b>
Contraceptive self-efficacy	-Factors enhancing contraceptive self-efficacy	-Partner’s permission -Family members’ advice -Health care providers’ information
	-Barrier to contraceptive use	-Side effects of contraceptives
Contraceptive knowledge	-Misconceptions of contraceptive knowledge	
	-Lack of specific contraceptive knowledge	
Socio-demographic characteristics	-Uncertainty of life situations	-Concern about future relationship -Expectation of higher education -Concern about job opportunities

The analysis process started with developing preliminary coding. The researcher developed preliminary coding based on the priority for coding derived from a conceptual framework guiding the study. The preliminary codes were CSE, CK, and socio-demographic characteristics which were identified as evidence of the participants’ perceptions of CSE, evidence of the participants’ perceptions of CK, as well as evidence of participants’ socio-demographic characteristics.

To formulate coding definitions, the researcher determined the operational definitions of each preliminary code by using the meaning of the concepts in the conceptual framework.

For immersion, interview transcripts were read and re-read by the researcher, and all text that on first impression appeared to represent evidence of the preliminary codes were

highlighted. This step provided a sense of the study as a whole, such as content in context, expected content, and perspectives.

To identify connections, the researcher coded all highlighted passages using the predetermined codes and reviewed connections within the data and the preliminary codes for similarities and variations among codes. Some codes were combined, while others were split into subcategories.

To check formative reliability, the coded content was compared with the deductive coding frame to ensure reliability. After coding was completed, the codes were translated into English by the researcher and three bilingual experts.

Two experts in the area of qualitative study were asked to participate in coding discussion and critiques. When a high level of agreement was achieved, this suggested that the coding frame used was appropriate. The researcher reviewed codes and examined the final codes to organize themes. Finally, the researcher met with peers and shared codes, then identified and agreed upon the major themes (Gaughran & Asgary, 2014; Hsiu-Fang & Sarah, 2005). Emerging themes included factors enhancing CSE, barrier to contraceptive use, misconceptions of CK, lack of specific-CK, and uncertainty of life situations.

## **Results**

All participants agreed that contraception after birth was useful in general, because they wanted to space their pregnancy for at least 2 or 3 years. All participants had heard about the following methods of contraception: male condoms, oral contraceptive pills, injectable contraceptives, and implants. Six participants decided to use injectable contraceptives, 2 participants planned to use oral contraceptive pills, and other participants were inclined to choose implants. Five themes emerging from the interviews are presented.

### **Factors Enhancing CSE**

Several participants indicated that their self-confidence in deciding to use contraception was dependent on their partner's permission, family members' advice, and information from health care providers.

**Partner's permission.** Some participants did not feel they could decide on a contraceptive method by themselves. They felt that planning for contraception was the responsibility of both partners. Therefore, they discussed the contraceptive method they should use after birth with their partners, but the choice of contraceptive also required the male partners' permission. Most participants said that their partners agreed with contraceptive use. One participant was reluctant to decide on a contraceptive method and said she would decide after discussing this issue with her partner.

I was reluctant. First of all, I consulted with my partner about implants. He did not agree, but he preferred injectables every 3 months. Then, he changed his mind and allowed me to use implants because it lasts for 3 years. (No. 219).

**Family members' advice.** Three participants were encouraged to use contraception by members of their family, such as their mother, older sister, aunt, or grandmother. The participants said this gave them the self-confidence to decide on the method of contraception. When the researcher asked how the participant decided on a contraceptive method, one said, "I heard my mother and aunt talking about injectable contraceptives (No. 2110)." Another participant revealed that "My older sister and others, suggested that injectable contraceptives were easier than other methods because she [old sister] had experience with using it before (No. 111)." One participant who was a single mother might use the injectable method based on her grandmother's advice.

My grandmother told me that injectable is the best method, better than implants and female sterilization. For the injectable method, I can space my pregnancy and am not worried about taking pills every day. With pills, you must take them every day. If you forget, you may get pregnant. The injectable method lasts for 3 months. (No. 412).

**Health care providers' information.** One participant was the primary decision-maker. She decided to use contraception without her partner's knowledge. Although her mother introduced the idea of implants to her, she was not interested in this method and chose injectables because she learned about it during an antenatal visit.

During antenatal care, my health care providers [physician and nurse] told me that female sterilization was an option, but I did not want to do it. They offered other options, such as oral contraceptive pills, injectable contraceptives, and implants. I told them I preferred the injectable method. (No. 405).

### **Barrier to Contraceptive Use**

All participants reported that side effects of contraceptives were their greatest concern and were seen as a barrier to contraceptive use. The participants would not decide on a contraceptive method unless the safety of the method was confirmed by friends, health care providers, or experienced persons.

**Side effects of contraceptives.** Four participants indicated that side effects influenced their choice of contraceptive. One participant was active on a Facebook pregnancy group where women posted their experiences with contraception.

Many women posted on Facebook about their allergic reaction to the implants. They asked their physician to remove the implants, but the physician refused to do so. The women

experienced a severely swollen hand, vertigo, and fainting. “Because of that, I will not use implants.” (No. 217).

Three participants were concerned about the side effects of injectable contraceptives. They also thought that having an injection was more complicated than taking pills. The participants worried about the pain from the injection and a delay in returning fertility.

If we use injection for a long time, 3-4 years, it affects our uterus. My friend used injectable contraceptives. She got married and she was not be able to get pregnant, infertility I think. (No. 2110).

Another participant said “I read that people said that injectable contraceptives were not good, it causes dry uterus.” When the researcher asked what she meant by “dry uterus.” She explained that “the uterus cannot excrete menstrual blood, the waste product is still in your body, and there is irregular menstruation. I may use the injectable method for a short period, but then I will switch to the male condom.” (405).

I will take pills for 4-5 years. Although, I am not sure about the safety of the pills, this method will not affect my body, like the others. Injections cause dry uterus, infertility. If you want to get pregnant, you cannot...implants are horrible. In the future, if I don't want any more children, I will choose female sterilization. (No. 2111).

### **Misconceptions of CK**

All of participants reported CK from contraceptive education in the primary school and secondary school, but had forgotten the information since it was from long ago. During antenatal care, health care providers provided contraceptive information to the participants. However,

participants received a lot of contraceptive information from their partners, friends, and the internet. Many participants misconstrued the contraceptive information.

My partner wants to use the natural method because he fears hormonal disturbance and other side effects. Male sterilization can cause a man to become gay. (No. 217)

If a woman uses injectables for several years, it can damage her uterus. You cannot have a baby. My friend told me about her experience. After she married, she used injectables for 3-4 years, then stopped using any kind of contraception and never got pregnant. (No. 2110).

I heard about pills. If a woman takes an oral contraceptive pill, it takes time to dilute and work. The tablet is suspended in the middle of the uterus and it doesn't work immediately. This is different from the injectable method. Once a women gets it [injectable], it enters into the buttock and you can have sex with safety immediately. (No. 412).

I plan to space my next pregnancy for 2-5 years or when we [participant and partner] are ready to have another child. I will choose pills because implants and injectables can cause infertility. It is difficult for women to get pregnant again, or forever. (No. 2111).

### **Lack of Specific-CK**

Many participants mentioned a lack of specific-CK, despite having had some contraceptive education in school. Participants had limited knowledge of contraception. Generally, contraceptive information was integrated in a sex education curriculum that usually focused on male condoms, oral contraceptive pills, and emergency contraception pills. The teachers talked superficially about the use and adverse effects of contraceptives. The participants

reported a lack of knowledge about injectable contraceptives, implants, intrauterine devices, as well as sterilization.

My teacher taught us to use male condoms, pills, and injectables to protect ourselves from pregnancy. But the injectable method was addressed in brief. (No. 2110).

One participant was considering injectable contraceptives and male condoms because she did not know much about other methods, “I don’t know about implants and what will happen, what the side effects or symptoms are, so that I prefer the injectable method and will switch to male condoms later.” (No. 405).

During the interview, one participant asked the researcher, “which one is better pills or injectable? My friend used an injectable contraceptive but I don’t know anything about it.” (No. 311). Another participant revealed that “I only know about oral contraceptive pills and injectable method.” (No. 219).

One participant stated that “health care providers came to school and taught students about contraception. The providers might be from the local health center. They gave information about several methods of contraceptives, but the information was superficial.”

I attended a sexual education class at school. It might have been taught by a physician and nurses from the health care center nearby, I cannot remember. They talked about several contraceptive methods, such as emergency contraceptive pills, injectables, implants, male and female condoms, and so on, but they did not give many details about each method. (No. 111).

### **Uncertainty of Life Situations**

The researcher documented that contraceptive use was not the most concerning issue for adolescent mothers. Other challenging issues, such as future relationships, continuing higher education, and finding jobs were their primary concerns. Many participants raised these topics during the interview. They could not anticipate what would happen in the future. Some participants could not make a long term plan or commitment regarding contraception because of the uncertainty they felt about the future.

**Concern about future relationship.** When discussing contraceptive use in the future, a single mother originally planned to use injectable contraceptives, then changed her mind to oral contraceptive pills, and at the end of the conversation, switched to yet another method. The single mother was trying to determine the best method to use in the event that she entered into a serious relationship. If her future boyfriend wanted a baby, she would get pregnant again. This made her uncertain about which contraceptive method to use.

If I do not need more babies, I will choose injectables during “staying on fire [traditional Thai practice for a woman to return to normal health condition after giving birth: spending a week or more lying by a fireplace, uterine massage with hot compress, scented herbal steam, warm bathing, warm water drinking, etc.]” because I am so young. It seems like injectable is safest for me. But what if I meet a man who wants to have a baby and I have to give birth to another child? If you ask me what I would choose if I do not need to have more babies. I will say injectable or oral pills or condom. (No. 412).

The researcher tried to ask her final decision for a contraceptive method, but she focused on her future relationship with a new partner, especially his desire for them to have a baby.

I will avoid pregnancy until I find a secure life with a good man, spend time together throughout my life, with someone who can accept that I have had a baby before. My future life is insecure...injectable might be the best method until I can find a right man. If I choose female sterilization, and then I meet a good guy and he wants a baby and I cannot have one, he will leave me. (No. 412).

**Expectation of higher education.** Another participant wanted to space her pregnancy as long as possible because she planned to return to school after giving birth. However, she had several contraceptive methods in mind which were not finalized at the time of the interview.

I am thinking about how to avoid a repeat pregnancy for a long time and with 100% safety. Before, I did not plan for contraception. May be the injectable method, but implants are cheaper. I may choose implants because it is inexpensive and works longer over time. I will go back to school. This is the most important reason why I may choose implants. After giving birth, I can get pregnant again, easily. (No. 2110).

**Concern about job opportunities.** One participant reported having 2 children including this current birth. She wanted to space her pregnancy, but the issue of contraception was not the main focus in the conversation. The participant was not worried about contraceptive use and did not decide on a contraceptive method. When the researcher began the interview by asking about her perceptions, thoughts, and experiences of contraception, she complained about her lack of income and the large cost of raising 2 children.

I will use a birth control to avoid pregnancy after this birth [laughing] because I am very young and already have 2 children. Because of my young age, it is difficult to work...income, pay a lot for household needs. (No. 405).

This participant was confused about contraceptive methods. When the researcher asked more specific questions about her plan for using contraception, she stated "...to avoid pregnancy by using injectables... my mother suggested implants because it lasts for a long period. I do not know yet, I have no information. I may use condoms because I read a book about injectable method, it is not good...I trust in a natural method, condoms."

### **Discussion**

Based on the qualitative data, the findings could be categorized into 3 major sections: influencing factors of CSE, confounding factor of CSE, and influencing factors of CK. The discussion is organized by these 3 topics.

#### **Influencing Factors of CSE**

The findings from the interviews showed that most participants had higher CSE after they had the opportunity to discuss contraceptives with their partners, family members, or health care providers. Support and information gained from partners, mothers and other relatives, physicians, and nurses could enhance their ability to decide on the contraceptive method (Smith, Buzi, Kozinetz, Peskin, & Wiemann, 2016).

It seemed that partners played an important role in supporting the use of contraception. The participants realized that contraception was the responsibility of both female and male partners. Discussion about contraception was crucial and many felt that the final decision should be made by both the participant and her partner. Alternately, this dynamic could illustrate the complicated gender role among adolescents. CSE may depend on her partner's need and desires, while ignoring her own need for contraception. A study (Tung, Cook, & Lu, 2012) on Chinese college students, identified the reasons for why they did not use condoms every time they had

sex: their partners disliked using condoms; their partners might get angry; and they trusted their partners.

Thai culture has religious and traditional beliefs about contraception. Contraceptive use in adolescence is seen as a violation of religious, social, gender norms and traditional norms (Hanson, McMahon, Griese, & Kenyon, 2014). Several studies also supported the influence of cultural norms, gender roles, and social supports on CSE (Villarreal, Wiley, Housman, & Martinez-Ramos, 2016). CSE might be related to cultural differences, contraceptive skills by self or partner, negotiation skills, and ability to persuade a partner to use contraception (Asante & Doku, 2010).

Besides, several studies found the relationship between CSE and knowledge of contraception. LaChausse (2016) indicated that students in 21 suburban public high schools in California who participated in a contraceptive education program increased their self-confidence in using a birth control. Similarly, youth in 44 residential group homes in California improved their contraceptive self-efficacy after receiving a sexual health program related to contraception (Oman, Vesely, Green, Clements-Nolle, & Minggen, 2018). Latino adolescents in a school-based health center improved their condom use and sense of self-efficacy to use condoms in the future after taking part in a sexual health program (Serowoky, George, & Yarandi, 2015).

Knowledge of contraception might be not the only factor related to CSE. Abiodun (2016) stated that knowledge was necessary, but it was insufficient to produce most behavior. Walsh, Jenner, Leger, and Broussard (2015) believed that CSE of postpartum adolescent mothers was shaped by individuals' perceptions of past experience and performances of others. If adolescent mothers were socially rewarded for contraceptive practice, they would be more likely to increase their self-efficacy of contraception (Walsh et al., 2015).

All participants stated that the side effects of contraceptives were of the most concern. The participants were unable to decide on a contraceptive method because they were afraid of the adverse effects of contraceptives. Many participants heard about negative experiences with injectables and implants. Some participants had experienced adverse effects of contraceptives themselves. Bandura (1986) stated that people tended to perform activities they were able to handle and avoided tasks that were beyond their capabilities. Fear of the adverse effects of contraceptives could be a challenge to promoting contraceptive use by adolescents.

In Thailand, implants are recommended for female adolescents who want to extend the length of protection (Chiang Mai Provincial Health Office, 2016). Implants are considered as the best contraceptive method as they remain in the place for several years, 3 or 5 years with fewer adverse effects. However, this method may cause abnormal uterine bleeding, emotional lability, weight gain, headache, and acne. Another method is the progestin injection, which may cause menstrual cycle irregularities, weight gain, interference with bone density, headache, breast pain, hair loss, and change in libido (Ott & Sucato, 2014).

In order to decide on a contraceptive method, adolescent mothers need to be aware of the actions, benefits and adverse effects of each method. Health care providers play an important role in providing this information to adolescent mothers.

### **Confounding Factors of CSE**

During the in-depth interviews, the researcher noticed a sense of uncertainty regarding the future among the participants, especially the single mother. They were concerned about future relationships, expectations to pursue higher education, and job opportunities. These could be the indirect factors contributing to CSE.

The participants were susceptible to a number of stressors, especially the single mother, who had to raise her baby in the absence of a male partner. The single mother did not want to commit to contraception. In the future, she expected to meet someone (good man) appropriate for a long-term committed relationship. If this happened, she anticipated that this person would expect her to have another baby. It was unclear whether the single mother would avoid engaging in sexual activity for a period of time or would have sexual relationships intermittently when she had the opportunity. She was trying to find a contraceptive method that would fit her situation.

Unclear decision-making around the issue of contraception was challenging for health care providers. Contraceptive education programs require a deeper understanding of the varying patterns in adolescent mothers' sexual norms. The program should be clear in offering several contraceptive options for adolescents including supportive communication to promote their decision-making (Byers, O'Sullivan, & Brotto, 2016).

Some adolescent mothers left school at an early age, and had difficult personal relationships with their family. Some participants might experience symptoms of depression because of their anxiety over how to stand up for themselves. Following the birth, most adolescent mothers who dropped out of school had to take care of their children. This might mean that it will take a longer time for them to complete their education and to seek good job opportunities. Adolescent mothers realized that people with low levels of education tended to find jobs in unskilled manual labor, agriculture, and service for low pay. Therefore, adolescent mothers expected to return to school after birth. If their expectation came true, they might use a long-term contraceptive method, if not, they might find another option. Therefore, adolescent mothers might not want to decide on a contraceptive method immediately after birth, because they are in an uncertain situation that impacts their CSE.

Some participants needed to find jobs after birth. In a previous study, Issel, Gilmet, Chihara, and Slaughter-Acey (2015) indicated that pregnant adolescents found it difficult to find a job. Not having a job was indirectly associated with low self-efficacy in health conditions (Helova, Budhwani, & Hearld, 2017). The decision about a contraceptive method was influenced by the ability to afford one. McGann, Moss, and White (2012) found that workers who had unsecure employment and were poorly paid did not have the ability to pay for health improvements. Poverty might cause low CSE, because adolescent mothers may be unable to make a long term plan or commit to a contraceptive method until financial and occupational security are achieved.

It seemed to be that many participants were facing several stressors. Health care providers should assess the adolescents' needs and include coping therapy for adolescent postpartum mothers who face stressors. The intervention could help adolescents feel comfortable and supported and find a way to respond to stressors (Daryanani et al., 2017; Hayatbakhsh et al., 2013).

### **Influencing Factors of CK**

The findings from the in-depth interviews showed misconceptions about CK and a lack of specific-CK. There were a variety of misconceptions about contraception among the participants. Many participants perceived that: male condoms could cause a man to become a "gay"; implants and injectables led to infertility; oral contraceptive tablets would get suspended in the middle of the uterus causing a delay in protection. These misconceptions were partly due to the complex nature of several types of contraceptives as well as the good evidence regarding contraception use that was not shared (Yousif, Bridson, & Halawa, 2016).

Misconceptions about future fertility might deter some female adolescents from choosing implants and injection. Moreau, Bohet, Hassoun, Ringa, and Bajos (2014) conducted a study in France, to investigate the determinants of IUD use and IUD recommendations from the user and prescriber perspectives. The results showed that 18% of participants believed that the IUDs could alter future fertility and only half were comfortable in using this method.

Contraceptive information provided to adolescents depended on providers' knowledge and perception of contraception. Faundes et al. (2016) conducted a study to evaluate the association between physicians' understanding of the emergency contraceptive pill, their personal experience with it, and their practice of informing their patients about the method and prescribing it. The study showed that a large percentage of physicians failed to inform their patients about the emergency contraception pills because their misconception that the pill could cause a mini-abortion. Therefore, early counseling, accurate and appropriate knowledge of contraception should be given to female adolescents, partners, and relatives, in order to reduce the risk of misconceptions.

The participants in this study lacked specific-CK. Many participants knew about condoms, oral contraceptive pills, and emergency contraception pills, but they lacked specific knowledge of other contraceptives. CK gained from school was mostly related to condom use, oral contraceptive pills, and emergency contraception pills. Contraceptive education programs in schools stressed increasing knowledge and awareness on how to use condoms and emergency contraception to prevent unintended pregnancy and sexually transmitted infections including HIV (Ajayi, Nwokocha, Akpan, & Adeniyi, 2016; Chambers et al., 2016; Serowoky et al., 2015). Therefore, the contraceptive knowledge taught in school is insufficient for adolescent students. Ritchwood et al. (2016) also found that African-American adolescents in North Carolina had low

knowledge in condom use. This suggested a need of skills-building programs to maximize African-American adolescents' knowledge regarding condom use.

Teachers, friends, health providers, and media were reported as the major sources of information. Therefore, these persons played an important role in informing adolescent users about contraception. Contraceptive education programs need to be integrated into educational curricula, prenatal and postpartum education programs, as well as media channels, such as television, websites, and mobile applications.

To conclude, a deductive approach to content analysis could support and extend the findings gained from a quantitative method. The findings from both quantitative and qualitative approaches could be used to explain the conceptual framework of SCT focusing on a concept of personal agency and its relation to CSE.

Supports from partners, relatives, and health care providers could also promote CSE. Fear of the adverse effects of contraceptive methods lowered participants' CSE. Some adolescents felt uncertain about their life situations, such as future relationships, education, and job opportunities. These factors could indirectly alter the use of contraception.

Some participants showed misconceptions of CK and a lack of specific-CK. Health care providers played a crucial role in promoting contraceptive use and family planning during prenatal and postpartum periods, to widen the inter-pregnancy interval, prevent repeat pregnancy in adolescence, and decrease unintended pregnancies. However, the findings were limited to adolescent postpartum mothers under Thai cultural and norms.

### **Limitations**

There were four main limitations in this study: generalizability; selecting some elements in the personal agency; biased results inherent in deductive method analysis; and physical and psychological conditions of the participants.

First, a mixed methods study of quantitative and qualitative approaches cannot allow for generalization to others populations. The results of the study are limited to adolescent postpartum mothers who met the study's inclusion criteria under Thai cultural and norms.

Second, this study was informed by the SCT which embraces an interactional model of causation in which environmental events, personal factors, and behavior all operate as interacting determinants of each other. This study focused only on some elements in personal factors and ignored other variables that might affect CSE of adolescent postpartum mothers.

The study used a deductive method to analyze the participants' perceptions, feelings, attitudes, and experiences of contraception. This method is biased in that the researcher may be more likely to find evidence supporting the conceptual framework of the study. Overemphasis on the conceptual framework could blind the researcher to the context of phenomenon. During the interviews, the participants might get cues to answer questions in a certain way or to agree with the questions to please the researcher. These limitations might lead to biased results. However, the researcher employed two peers to review and examine the themes that emerged from the deductive content analysis, in order to increase the accuracy of the themes and subthemes.

Lastly, physical and psychological well-being also affected the adolescents' perceived self-efficacy of contraception. The participants may have felt uncomfortable during the interviews because the interviews were conducted just after 24 hours post-delivery. Their

physical discomfort could have included fatigue, perineal pain, and concern of newborn care. These might affect their response on the questionnaires and the interview questions.

### **Implications**

The findings of this study have several implications for the school teachers, health care providers, and researchers.

Adolescent postpartum mothers needed to improve their self-confidence in contraceptive use. In schools, female adolescents should be trained to negotiate contraceptive use or sexual situations. Sexual education programs should focus on improvement of contraceptive self-efficacy and contraceptive communication skills. Teachers should be trained in the use of contraceptive methods, adverse effects, and contraindications. This can improve and expand the teachers' knowledge regarding contraception

Health care providers who provide care to adolescent postpartum mothers should provide time for discussion about contraceptive methods in the postpartum ward. In addition, adolescent mothers may need to learn how to initiate a discussion with their partners about contraceptive use, as well as to practice techniques to improve their CSE. There is a need to assess the support from the postpartum adolescents' partners and family during the postpartum period. For adolescent mothers with no partners or limited parental support, counseling on the appropriate time to get pregnant, a return to the health care services, and sources of contraception are essential, to enhance their CK and CSE.

In order to increase adherence for contraceptive methods, health care providers need to promote healthy decision-making on contraceptive methods. Discussion of regular visits and frequency of reassessment are needed, in order to assess contraceptive issues, such as continuation, adherence, adverse effects, and complications.

Future study, others elements in personal agency, such as biological changes, family relationships, social roles, resources for contraception, and contraceptive skills should be examined through statistical tests of difference and by comparing the meaning of concepts.

**Conflict of interest**

There are no conflicts of interests to declare.

### References

- Abiodun, O. (2016). Use of emergency contraception in Nigeria: An exploration of related factors among sexually active female university students. *Sexual & Reproductive Healthcare, 7*, 14-20. doi:<https://doi.org/10.1016/j.srhc.2015.10.004>
- Ajayi, A. I., Nwokocha, E. E., Akpan, W., & Adeniyi, O. V. (2016). Use of non-emergency contraceptive pills and concoctions as emergency contraception among Nigerian University students: Results of a qualitative study. *BMC Public Health, 16*(1), 1046. doi:10.1186/s12889-016-3707-4
- Areemit, R., Thinkhamrop, J., Kosuwon, P., Kiatchoosakun, P., Sutra, S., & Thepsuthammarat, K. (2012). Adolescent pregnancy: Thailand's national agenda. *Journal of the Medical Association of Thailand, 95 Suppl 7*, S134-142.
- Asante, K. O., & Doku, P. N. (2010). Cultural adaptation of the condom use self efficacy scale (CUSES) in Ghana. *BMC Public Health, 10*, 227-233.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, Connecticut: Information Age Publishing.
- Bandura, A. (1986). *Social foundations of thought and action*. New Jersey: Prentice-Hall.
- Bureau of Reproductive Health. (2017). *Reproductive health situation in adolescents*. Retrieved from [http://rh.anamai.moph.go.th/ewt\\_dl\\_link.php?nid=23](http://rh.anamai.moph.go.th/ewt_dl_link.php?nid=23)
- Bureau of Reproductive Health. (2015). *Fact sheet adolescent and reproductive health*. Retrieved from <http://rh.anamai.moph.go.th/download/pdf/FactSheet-%20OK.pdf>

- Byers, E., O'Sullivan, L., & Brotto, L. (2016). Time Out from Sex or Romance: Sexually Experienced Adolescents' Decisions to Purposefully Avoid Sexual Activity or Romantic Relationships. *Journal of Youth & Adolescence*, 45(5), 831-845. doi:10.1007/s10964-016-0447-9
- Chambers, R., Tingey, L., Mullany, B., Parker, S., Lee, A., & Barlow, A. (2016). Exploring sexual risk taking among American Indian adolescents through protection motivation theory. *AIDS Care*, 28(9), 1089-1096. doi:10.1080/09540121.2016.1164289
- Chandra-Mouli, V., McCarraher, D. R., Phillips, S. J., Williamson, N. E., & Hainsworth, G. (2014). Contraception for adolescents in low and middle income countries: Needs, barriers, and access. *Reproductive Health*, 11(1), 1. doi:10.1186/1742-4755-11-1
- Chantrapanichkul, P., & Chawanpaiboon, S. (2013). Adverse pregnancy outcomes in cases involving extremely young maternal age. *International Journal of Gynaecology and Obstetrics*, 120(2), 160-164. doi:10.1016/j.ijgo.2012.08.024
- Chaovitsaree, S., Noi-um, S., & Kietpeerakool, C. (2012). Review of postpartum contraceptive practices at Chiang Mai University Hospital: Implications for improving quality of service. *Medical Principles and Practice*, 21(2), 145-149. doi:10.1159/000333557
- Chiang Mai Provincial Health Office. (2018). *Provincial inspeculate report 2018*. Chiang Mai, Thailand: Health Promotion Group.
- Chiang Mai Provincial Health Office. (2017). *Provincial inspeculate report 2017*. Chiang Mai, Thailand: Health Promotion Group.
- Chiang Mai Provincial Health Office. (2016). *Provincial inspeculate report 2016*. Chiang Mai, Thailand: Health Promotion Group.

- Cresswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4<sup>th</sup> ed.). Thousand Oaks, CA: SAGE.
- Dallas, C. M. (2013). Rapid repeat pregnancy among unmarried, African American adolescent parent couples. *Western Journal of Nursing Research*, 35(2), 177-192. doi:10.1177/0193945912463268
- Daryanani, I., Hamilton, J., McArthur, B., Steinberg, L., Abramson, L., & Alloy, L. (2017). Cognitive Vulnerabilities to Depression for Adolescents in Single-Mother and Two-Parent Families. *Journal of Youth & Adolescence*, 46(1), 213-227. doi:10.1007/s10964-016-0607-y
- Drisko, J. W. (2016). *Content analysis*. New York, NY: Oxford University Press.
- Faundes, A., Osis, M. J., Sousa, M. H., Duarte, G. A., Miranda, L., & Oliveira, W. (2016). Physicians' information to patients and prescription of the emergency contraceptive pill according to their personal experience of using the method and perception of its mechanism of action. *The European Journal of Contraception and Reproductive Health Care*, 21(2), 176-182. doi:10.3109/13625187.2015.1111325
- Gaughran, M., & Asgary, R. (2014). On-site comprehensive curriculum to teach reproductive health to female adolescents in Kenya. *Journal of Women's Health (15409996)*, 23(4), 358-364. doi:10.1089/jwh.2013.4523
- Hanson, J. D., McMahon, T. R., Griese, E. R., & Kenyon, D. B. (2014). Understanding gender roles in teen pregnancy prevention among American Indian youth. *American Journal of Health Behavior*, 38(6), 807-815. doi:10.5993/AJHB.38.6.2

- Hayatbakhsh, R., Clavarino, A. M., Williams, G. M., Bor, W., O'Callaghan, M. J., & Najman, J. M. (2013). Family structure, marital discord and offspring's psychopathology in early adulthood: A prospective study. *European Child & Adolescent Psychiatry, 22*(11), 693-700. doi:10.1007/s00787-013-0464-0
- Helova, A., Budhwani, H., & Hearld, K. (2017). Associates of Neonatal, Infant and Child Mortality in the Islamic Republic of Pakistan: A Multilevel Analysis Using the 2012-2013 Demographic and Health Surveys. *Maternal & Child Health Journal, 21*(2), 367-375. doi:10.1007/s10995-016-2121-y
- Hsiu-Fang, H., & Sarah, E. S. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. doi:10.1177/1049732305276687
- Issel, L., Gilmet, K., Chihara, I., & Slaughter-Acey, J. (2015). Adolescent and Adult Clients in Prenatal Case Management: Differences in Problems and Interventions Used. *Maternal & Child Health Journal, 19*(12), 2673-2681. doi:10.1007/s10995-015-1789-8
- Jeng, K. (2012). *Pregnancy in adolescence*. Retrieved from <http://www.ucbp.net/wp-content/uploads/2014/03/1-57-การตั้งครรภ์ในวัยรุ่น.pdf>
- Khumsaen, N., & Gary, F. A. (2009). Determinants of actual condom use among adolescents in Thailand. *Journal of the Association of Nurses in AIDS Care, 20*(3), 218-229. doi:10.1016/j.jana.2008.12.006
- LaChausse, R. G. (2016). A Clustered randomized controlled trial of the positive prevention plus adolescent pregnancy prevention program. *American Journal of Public Health, 106*, S91-S96. doi:10.2105/AJPH.2016.303414

- Lemay, C. A., Cashman, S. B., Elfenbein, D. S., & Felice, M. E. (2007). Adolescent mothers' attitudes toward contraceptive use before and after pregnancy. *Journal of Pediatric and Adolescent Gynecology, 20*(4), 233-240. doi:10.1016/j.jpag.2006.09.01
- McGann, M., Moss, J., & White, K. (2012). Health, freedom and work in rural Victoria: The impact of labour market casualisation on health and wellbeing. *Health Sociology Review, 21*(1), 99-115.
- Moreau, C., Bohet, A., Hassoun, D., Ringa, V., & Bajos, N. (2014). IUD use in France: Women's and physician's perspectives. *Contraception, 89*(1), 9-16. doi:10.1016/j.contraception.2013.10.003
- Oman, R. F., Vesely, S. K., Green, J., Clements-Nolle, K., & Minggen, L. (2018). Adolescent pregnancy prevention among youths living in group care homes: A cluster randomized controlled trial. *American Journal of Public Health, 108*, S38-S44. doi:10.2105/AJPH.2017.304126
- Ott, M. A., & Sucato, G. S. (2014). Contraception for adolescents. *Pediatrics, 134*(4), e1257-1281. doi:10.1542/peds.2014-2300
- Ritchwood, T. D., Dave, G., Carthron, D. L., Isler, M. R., Blumenthal, C., Wynn, M., . . . Corbie-Smith, G. (2016). Adolescents and parental caregivers as lay health advisers in a community-based risk reduction intervention for youth: Baseline data from Teach One, Reach One. *AIDS Care, 28*(4), 537-542. doi:10.1080/09540121.2015.1112348
- Schunk D. H., & Meece, J. L. (2006). Self-efficacy development in adolescence. In F. Pajares & T. Urda (Eds.). *Self-efficacy beliefs of adolescents* (pp. 71-96). Greenwich, Connecticut: Information Age Publishing.

- Schwarzer, R., & Luszczynska, A. (2006). Self-efficacy, adolescents' risk-taking behaviors, and health. In F. Pajares & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents* (pp. 139-159). Greenwich, Connecticut: Information Age Publishing.
- Serowoky, M. L., George, N., & Yarandi, H. (2015). Using the program logic model to evaluate ¡cuídate!: A sexual health program for Latino adolescents in a school-based health center. *Worldviews on Evidence-Based Nursing, 12*(5), 297-305. doi:10.1111/wvn.12110
- Smith, P., Buzi, R., Kozinetz, C., Peskin, M., & Wiemann, C. (2016). Impact of a group prenatal program for pregnant adolescents on perceived partner support. *Child & Adolescent Social Work Journal, 33*(5), 417-428. doi:10.1007/s10560-016-0441-9
- Sriprasert, I., Chaovisitsaree, S., Sribanditmongkhon, N., Sunthornlimsiri, N., & Kietpeerakool, C. (2015). Unintended pregnancy and associated risk factors among young pregnant women. *International Journal of Gynaecology and Obstetrics, 128*(3), 228-231. doi:10.1016/j.ijgo. 2014.09.004
- Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: SAGE.
- Thongto, N. (2011). Risk factors for low birth weight newborns in Thailand. *Thai Population Journal, 3*(1), 51-69.
- Tung, W. C., Cook, D. M., & Lu, M. (2012). Sexual behaviors, decisional balance, and self-efficacy among a sample of Chinese college students in the United States. *Journal of American College Health, 60*(5), 367-373. doi:10.1080/07448481.2012.663839
- United Nations Population Fund Thailand Country Office. (2014). *The state of Thailand' population 2013: Motherhood in childhood facing the challenge of adolescent pregnancy*. Retrieved from <http://countryoffice.unfpa.org/thailand/drive/MotherhoodinChildhood.pdf>

- Villarreal, K. M., Wiley, D. C., Housman, J., & Martinez-Ramos, G. (2016). Attitudes about partner communication regarding contraceptive use among hispanic male college students. *Journal of American College Health, 64*(4), 279-287. doi:10.1080/07448481.2015.1117467
- Walsh, S., Jenner, E., Leger, R., & Broussard, M. (2015). Effects of a sexual risk reduction program for African-American adolescents on social cognitive antecedents of behavior change. *American Journal of Health Behavior, 39*(5), 610-622. doi:10.5993/AJHB.39.5.3
- Wilson, E. K., Samandari, G., Koo, H. P., & Tucker, C. (2011). Adolescent mothers' postpartum contraceptive use: A qualitative study. *Perspectives on Sexual & Reproductive Health, 43*(4), 230-237. doi:10.1363/4323011
- Yousif, M. E., Bridson, J. M., & Halawa, A. (2016). Contraception after kidney transplantation, from myth to reality: A comprehensive review of the current evidence. *Experimental and Clinical Transplantation, 14*(3), 252-258. doi:10.6002/ect.2015.0278
- Zeck, W., Bjelic-Radisic, V., Haas, J., & Greimel, E. (2007). Impact of adolescent pregnancy on the future life of young mothers in terms of social, familial, and educational changes. *Journal of Adolescent Health, 41*(4), 380-388. doi:10.1016/j.jadohealth.2007.05.012