

# ปัจจัยทำนายความตั้งใจในการคุมกำเนิดแบบสองวิธี ในนักเรียนมัธยมศึกษาตอนต้นหญิงในจังหวัดชลบุรี Predictors of Intention to Use Dual Contraception among Junior High School Female Students in Chonburi Province, Thailand

นิพนธ์ต้นฉบับ

Original Article

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อศึกษาระดับและปัจจัยทำนายความตั้งใจในการคุมกำเนิดแบบสองวิธีในนักเรียนมัธยมศึกษาตอนต้นหญิงในจังหวัดชลบุรี **วิธีการศึกษา:** การศึกษาเชิงทำนายมีกลุ่มตัวอย่างเป็นนักเรียนหญิงในโรงเรียนมัธยมศึกษาของมัธยมศึกษาปีที่ 2 และ 3 ในจังหวัดชลบุรี ปีการศึกษา 2564 จำนวน 407 คน จากกลุ่มแบบหลายขั้นตอน เก็บข้อมูลระหว่างสิงหาคมถึงเดือนตุลาคม พ.ศ. 2564 โดยใช้แบบสอบถามผ่านระบบออนไลน์ ประกอบด้วยข้อมูลพื้นฐาน ความรู้เกี่ยวกับการคุมกำเนิด ทักษะติดต่อพฤติกรรมทางเพศ ความสะดวกใจของการสื่อสารทางเพศกับพ่อแม่ผู้ปกครอง ทักษะติดต่อการคุมกำเนิดแบบสองวิธี การคล้อยตามกลุ่มอ้างอิงคุมกำเนิดแบบสองวิธี การรับรู้ความสามารถในการคุมกำเนิดแบบสองวิธี และความตั้งใจคุมกำเนิดแบบสองวิธีของวัยรุ่นหญิง วิเคราะห์ข้อมูลโดยใช้สถิติวิเคราะห์สมการถดถอยพหุคูณแบบขั้นตอน **ผลการศึกษา:** นักเรียนหญิงชั้นมัธยมศึกษาตอนต้น ร้อยละ 68.8 มีความตั้งใจคุมกำเนิดแบบสองวิธีระดับมาก (ค่าเฉลี่ย = 26.35 คะแนน) โดยสัมพันธ์กับทัศนคติต่อการคุมกำเนิดแบบสองวิธี ( $\beta = -0.292$ ) การรับรู้ความสามารถของตนเองในคุมกำเนิดแบบสองวิธี ( $\beta = 0.239$ ) ผลสัมฤทธิ์ทางการเรียน ( $\beta = 0.178$ ) ( $P$ -value < 0.001 ทั้งหมด) และความสะดวกใจของการสื่อสารทางเพศกับพ่อแม่ผู้ปกครอง ( $\beta = 0.116$ ,  $P$ -value = 0.007) โดยร่วมกันอธิบายความแปรปรวนของความตั้งใจคุมกำเนิดได้ร้อยละ 28 ( $R^2_{adj} = 0.281$ ,  $F = 7.23$ ,  $P$ -value = 0.007) **สรุป:** ความตั้งใจในการคุมกำเนิดแบบสองวิธีในนักเรียนหญิงชั้นมัธยมศึกษาตอนต้นอยู่ในระดับสูง และสัมพันธ์กับทัศนคติต่อการคุมกำเนิด การรับรู้ความสามารถของตนเองในคุมกำเนิดแบบสองวิธี ผลสัมฤทธิ์ทางการเรียน และความสะดวกใจของการสื่อสารทางเพศกับพ่อแม่ผู้ปกครอง

**คำสำคัญ:** การคุมกำเนิดแบบสองวิธี, การตั้งครรภ์ไม่พึงประสงค์, โรคติดต่อทางเพศสัมพันธ์, ความตั้งใจในการคุมกำเนิดแบบสองวิธี

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## Abstract

**Objective:** To determine the intention to use contraception and its predictive factors in junior high school female students in Chonburi province, Thailand.

**Method:** In this predictive research, participants were 407 female students from junior high schools (grade 8 and 9) in Chonburi province recruited by multi-stage random sampling. Data collection was carried out from August to October 2021. Participants completed online questionnaires including demographic data, attitude toward sexual behavior, knowledge of contraception, comfortableness with sex communication with parents, attitudes toward dual contraception, subjective norms of dual contraception, self-efficacy of dual contraception and intention to use dual contraception. Associations were tested using stepwise multiple regression analysis.

**Results:** Majority of participants had high level of intention to use dual contraception (68.8%) with a mean of 26.35 points. The intention was significantly associated with attitude toward dual contraception ( $\beta = -0.292$ ), self-efficacy in dual contraception ( $\beta = 0.239$ ), academic achievement ( $\beta = 0.178$ ) with  $P$ -value < 0.001 for all, and comfortableness with sex communication with parents ( $\beta = 0.116$ ,  $P$ -value = .007). These factors together explained 28.8% of variance of the intention to use dual contraception ( $R^2_{adj} = 0.281$ ,  $P$ -value = 0.007). **Conclusion:** The intention to dual contraception among junior high school female students was at a high level and was associated attitudes toward dual contraception, self-efficacy in dual contraception, academic achievement and comfortableness with sex communication with parents.

**Keywords:** dual contraception, unplanned pregnancy, sexually transmitted diseases, intention to use dual contraception

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## Introduction

Pregnancy and sexually transmitted disease (STD) among adolescents have been a public health problem worldwide. The World Health Organization revealed 21 million pregnancies among teenagers aged 15 – 19 years old with 12 million births. About 55% of unplanned pregnancy among 15 – 19-year-old teenagers ended up with abortion.<sup>1</sup> In Thailand,

teenager pregnancy has been a major problem even though with a downward trend. However, STDs among teenagers have been more prevalent constantly. Birth rates from 2019 to 2011 were 31.3, 28.7, and 24.4 per 1,000 adolescents aged 15 – 19 years, respectively.<sup>2</sup> These rates were higher than the national plan on teenage pregnancy prevention and

management BE 2017 – 2026. In 2026, birth rate was set at not more than 25 per 1,000 in female Thais aged 15 – 19 years old.<sup>3</sup>

In Chonburi province, Thailand, teenage pregnancy has been a major public health problem. With a birth rate of 2253 out of 44957 or 50.1 per 1,000 15-19-year-old teenagers, it was the third highest rate of the country.<sup>4</sup> Based on the infection rate of STD and human immunodeficiency virus (HIV) database of Chonburi province in November 2020, the STD related illness was at a rate of 58.2 per 100,000 population which was higher than that of 54.16 per 100,000 population of the whole country. In the Health Region 6 which includes Chonburi province, STD rate was found the highest in individuals aged 15 – 24 years old (38.86%), of which 19.18% were students and 51.81% were daily labors.<sup>5</sup> These findings suggest the obvious burden of STD among adolescents.

In preventing premature pregnancy and STDs among adolescents, the emphasis should be on those with no sexual experience since the chance of success could be higher. For example, the Netherlands had the lowest rate of teenager's pregnancy in Europe with a rate of 7.2 per 1,000 teenagers younger than 18 years. The country teaches children sex education as early as 5 years of age.<sup>6</sup> This could suggest that to succeed in preventing premature pregnancy and STDs among teenagers, the country should adopt proactive education at younger age as possible.<sup>7</sup> Hence, programs to promote knowledge and skill to prevent unsafe sex should be initiated in female teenagers with no sexual experiences. Contraception is one of the methods to prevent unsafe sex which these target adolescents should be taught.

Among various contraception methods, dual contraception has been proven effective and more popular among adolescents. Dual contraception is the use of condom with other contraception method. Adolescents usually prefer temporary or reversible conception and semi-reversible contraception to irreversible ones. Temporary or reversible conception and semi-reversible contraception consist of oral contraceptive pills (OCPs), contraceptive injections, intrauterine devices, and contraceptive implants.<sup>8</sup> In promoting unsafe sex, most educational programs emphasized mostly single contraceptive methods such as provisions of free condoms, implants for teenager moms 2 – 3 years postpartum.<sup>2,9</sup> Studies about contraception methods among Thai junior high school students have been limited in number. Studies on sexual risk behavior and safe sex among Thai

female adolescents have been mainly on pregnancy prevention in late adolescents and pregnant adolescents seeking care at special clinics.<sup>10,11</sup> These studies examined behavior of use of single contraceptive methods such as condoms or OCPs.<sup>12,13</sup> Studies on dual contraception have been limited to adolescents with certain sexual experiences such as vocational school students in the southern Thailand and in Chonburi province.<sup>14,15</sup> Studies on dual contraception among early female adolescents is problematic since they are in the age not supposed to have sexual relationship. In this present study, we aimed to determine the intention to use dual contraception which is the best predictor of the actual use of dual contraception.<sup>16</sup> The intention to use dual contraception in turn is predicted by various factors.

The intention to use contraception both condoms and oral contraceptive pills among female adolescents could be predicted by various factors. These factors are personal characteristics and beliefs and attitudes. For personal characteristics, they include academic achievement measured as cumulative grade point average, positive attitude toward sexual behavior, knowledge about contraception, and comfortableness with communication on sex-related matters with parents. For beliefs and attitudes toward sexual behaviors, there are positive attitude toward dual contraception, subjective norms of dual contraceptive, and self-efficacy of dual contraception.

This present study was conceptually framed based on the Integrative Model of Behavioral Prediction of Fishbein.<sup>16</sup> The behavior is influenced by the intention of performing such behavior which could be influenced by attitudes, norms, and self-efficacy. Attitudes are beliefs about the action and the evaluation of the action. Norms are beliefs about the attitude of the reference group toward their own action and the motivation to agree with the reference group whether to perform the problematic behavior. Self-efficacy is the belief that one has control and perceived as such. These three factors could influence the perception of behavior control and directly influence the intention to perform the behavior. This intention is a motivator for the actual behavior. In addition to these psychosocial factors, other six basic factors could also affect the intention directly and indirectly. These factors include past behavior, demographic and cultural characteristics, attitude toward target of the behavior, emotional personality, interpersonal difference, and susceptibility to information. In this present study, it was

expected that the intention to use dual contraception in junior high school female students could be associated with basic factors and psychosocial factors. For basic factors, students with more cumulative GPA<sup>17-19</sup>, positive attitude toward sexual behavior<sup>18,20-22</sup>, knowledge about contraception<sup>19,20,22,23</sup>, comfortableness with communication on sex-related matters with parents<sup>23-28</sup> were more likely to have higher intention to use dual contraception. For psychosocial factors, students with more positive attitude toward dual contraception<sup>14,15</sup>, subjective norms of dual contraceptive??<sup>15,20,28</sup>, and self-efficacy of dual contraception<sup>14,15,20,28</sup> were more likely to use dual contraception.

This present study aimed to determine level of dual contraception intention and its predictive factors including cumulative GPA, attitude toward sexual behavior, knowledge on birth control, comfortableness with communication on sex-related matters with parents, attitudes toward dual contraception, subjective norms of dual contraception, and self-efficacy of dual contraception among junior high school female adolescents in Chonburi province, Thailand. It was hypothesized that dual-contraception intention among junior high school female adolescents could be predicted by cumulative GPA, attitude toward sexual behavior, knowledge on birth control, e comfortableness with communication on sex-related matters with parents, attitudes toward dual contraception, subjective norms of dual contraception, and self-efficacy of dual contraception.

## Methods

In this predictive research, study population was junior high school students in Mathayom 2 and 3 (or grade 8 and 9) in private schools in Chonburi province in the academic year of 2021. Participants were chosen from multi-stage sampling. First, districts were groups according to size of the population 5, 3, and 3 small, medium, and large districts, respectively to represent female adolescents in urban and rural areas. A total of 1, 2, and 3 schools were selected by simple random sampling for small, medium, and large districts, respectively. The number of students needed proportional to the number of students in each school was calculated and selected by simple random sampling without replacement. For the total of 407 students needed, 203 and 204 students in grade 8 and 9 were selected, respectively.

To be eligible, students had to be willing to participate the study, 13 – 15 years of age, able to read and write in Thai language, and able to access the Internet and electronic devices. The sample size was estimated based on the proportion difference.<sup>29</sup> With no previous studies on the topic, the proportion with the highest variability of 0.5 was assumed. With a type I error of 5%, 370 participants were needed. To compensate for a 10% incomplete data, a total of 407 participants were required.

### Research instruments

Research instruments consisted of 8 parts. For parts 2 – 8, content validity was tested using 5 experts specifically 3 adolescence medicine, 1 nursing faculty member specialized in health behavior, and 1 nurse specialized in family nursing. Content validity indices for these parts were found in the range of 0.73 – 0.95 indicating acceptable content of the questionnaire. Internal consistency reliability was also tested in 30 individuals with characteristics comparable to the participants. Cronbach's alpha coefficient and Kruder-Richardson-20 (KR-20) coefficient were reported as appropriate as follows.

The **first** part collected demographic characteristics including age, school class (grade 8 or 9), cumulative GPA, education level of parents, and monthly household income. The **second** part was questions evaluating **attitude toward sexual behavior**. The questions were modified from the questionnaire of sexual relationship in students.<sup>30</sup> The questions asked about opinions, beliefs, and feeling of junior high school students toward relationship with men while in school, sexual relationship, and sex media consumption. All 12 questions were negative statements with a 4-point rating scale ranging from 1-highly agree, to 4-highly disagree. With the possible total score of 48 points and a cut-off based on the actual mean score, a total score of 27 points or higher indicated a positive attitude toward sexual behavior; while 26 points or lower suggested a negative one. In this study, the questionnaire had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.84.

The **third** part assessed **knowledge about contraception** which was modified from a questionnaire on contraception knowledge suitable for junior high school students.<sup>13</sup> This 12-item questionnaire had 4 multiple-choice answers with one correct answer for each item. With the possible total score of 12 points, knowledge about contraception was categorized

based on the 80% cut-off suggested by Bloom as high and low (9 – 12 and 0 – 8 points, respectively). We found the difficulty level to be 0.33 - 0.83. In this study, the questionnaire had an acceptable internal consistency reliability with a KR-20 coefficient of 0.73.

The **fourth** part measured **comfortableness with communication on sex-related matters with parents** among junior high school female students. It was modified from the questionnaire of comfortableness with communication on sex-related matters with parents.<sup>31</sup> The sex-related matters included menstrual period, reproductive system, giving birth, use of condom and contraception methods, causes and symptoms of STDs and HIV infection, sexual drive management, and refusal of place with high sexual encounter risk. The response was a 4-point rating scale ranging from 1-highly uncomfortable to 4-highly comfortable. With the possible total score of 32 points, comfortableness was categorized using a cut-off based on the actual mean score as high and low (23 – 32 and 8 – 22 points, respectively). In this study, the questionnaire had a high internal consistency reliability with a Cronbach's alpha coefficient of 0.95.

In the **fifth** part, **attitude toward dual contraception** was evaluated using the questionnaire assessing opinions, beliefs, and feelings toward the matters.<sup>15</sup> With the total of 12 questions, 4 and 8 items were positive and negative, respectively. The response was a 4-point Likert-type rating scale ranging from 4-highly disagree to 1-highly agree. With this kind of scoring, higher scores meant higher likelihood of negative attitude for positive attitude items. For negative attitude items, before summing to obtain the total score, raw scores were re-assigned in the opposite direction as 1-highly disagree to 4-highly agree indicating that higher scores suggested higher likelihood of negative attitude. As a result, higher total scores indicated higher likelihood of negative attitude. With the possible total score of 12 – 48 points, and a cut-off based on the actual mean score, the attitude toward dual contraception was categorized as positive and negative (12 – 41 and 42 – 48 points, respectively). In this study, the questionnaire had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.88.

The **sixth** part assessed the **subjective norms of dual contraception** among junior high school female students which was modified from a tool to measure sexual relationship.<sup>32</sup> The questionnaire asked the female students

how much they agreed about social pressure on sexual conduct, and expectation, acceptance, and support about contraception and condom use from significant others including parents/guardians, peer students, and teachers. The questionnaire had 12 items with a response of 4-point rating scale ranging from 1-highly against to 4-accepted. With the possible total score of 21 – 84 points, the subjective norm was categorized using a cut-off based on the actual mean score as agreeing with the dual contraception as high and low (45 – 84 and 21 – 44 points, respectively). In this study, the questionnaire had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.89.

In the **seventh** part, the **self-efficacy in dual contraception** questionnaire among female adolescents was modified from the self-efficacy in dual contraception.<sup>15</sup> Students were asked to rate their capability and confidence to perform safe sex using dual contraception. The questionnaire had 7 items with a 4-point Likert-type scale ranging from 1-not at all confident to 4-highly confident. With the possible total score of 7 – 28 points, self-efficacy in dual contraception was categorized using a cut-off based on the actual mean score as high and low (23 – 28 and 7 – 22 points, respectively). In this study, the questionnaire had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.86.

The **last** part assessed the **intention to use dual contraception** among junior high school female students. The questions were modified from the questionnaire of the intention to use long term contraception which was developed based on the concept of Ajzen.<sup>20</sup> The three items measured intention on the future use of condom with other contraception methods including OCPs, emergency contraceptive pills, and contraceptive implants. The response was a visual analog scale ranging from 0-no intention to 10-full intention. With the possible total score of 0 – 30 points, the intention to use dual contraception was categorized using a cut-off based on the actual mean score as (26 – 30 and 0 -25 points, respectively). In this study, the questionnaire had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.87.

#### **Participant ethical protection**

The study was approved by the Ethics Committee for Human Study of Burapha University (approval number: G-HS059/2564; approval date: August 5, 2021). The researcher

provided objectives, process, and voluntary and anonymity nature of the study to school directors, students and parents. Students and parents were asked to provide written informed consent form. They could refuse to participate and withdraw from the study at any time with no consequences. Results of the study were presented as summary not individual student's information.

#### Data collection procedure

After permission from the school directors, the researcher contacted teachers for each class for the survey coordination. The teacher made appointment for the researcher and students and parents to meet. In the meeting, the researcher provided information about objectives, process and voluntary and anonymity of the study. Students and parents were informed that the survey would be conducted one week after the meeting through LINE application of each school. One week later, if students and parents agreed to participate, they were asked to provide written informed consent through LINE application and start filling the e-questionnaire in the Google™ Form. The Google™ Form verified written informed consent before starting e-questionnaire completion. The questionnaire completion took about 30 minutes.

#### Data analysis

Demographic characteristics and study factors were presented with descriptive statistics including mean with standard deviation (SD) and frequency with percentage. The associations between score of intention to use dual contraception and scores of predictive factors were tested using stepwise multiple regression analysis. All assumptions of multiple regression were met. Statistical significance was set at a type I error of 5% (or  $P$ -value < 0.05). All statistical analyses were conducted using the software program SPSS version 26.

## Results

Of the 407 participants, data of 398 participants (97.78%) were complete and used for analysis. Of these 398 participants, their age was in the range of 13 – 15 years old with an average of 14.2 years old ( $SD = 0.71$ ). Most participants had a cumulative GPA of 3.50 or higher (70.9%), monthly household income of 15,001 – 20,000 Baht (30.4%), parents' education of a bachelor's degree or higher (28.9%)

followed by advanced vocational school diploma (16.3%) and vocational school diploma (13.3%) (Table 1).

**Table 1** Demographic characteristics of the participants (N = 398).

Characteristics	N	%
<b>Age (years), range = 13 – 15, mean = 14.2 ± 0.71.</b>		
13	63	15.8
14	175	44
15	160	40.2
<b>Education level</b>		
Matthayom 2 (grade 8)	192	48.2
Matthayom 3 (grade 9)	206	51.8
<b>Cumulative GPA</b>		
3.50 or higher	282	70.9
2.50 – 3.49	116	29.1
<b>Monthly household income (Baht/month)</b>		
≤ 15,000	64	16.1
15,001 – 20,000	121	30.4
20,001 – 25,000	47	11.8
25,001 – 30,000	54	13.6
≥ 30,000	112	28.1
<b>Parents' highest education level</b>		
Primary school or lower	32	8.1
Junior high school	63	15.8
Senior high school	70	17.6
Vocational school diploma	53	13.3
Advanced vocational school diploma	65	16.3
Bachelor's degree or higher	115	28.9

Majority of the participants had positive attitude toward sexual behavior (56.3%), high level of knowledge about contraception (60.8%), and high level of comfortableness with communication on sex-related matters with parents (57.5%) with mean scores for all participants of 26.76 ± 4.52, 8.90 ± 1.61, and 23.03 ± 5.67 points, respectively. For psychosocial factors, majority had positive attitude toward dual contraception (53.0%), high level of subjective norms of dual contraception (56.0%), high level of self-efficacy of dual contraception (51.5%), and high level of intention to use dual contraception (68.8%) with mean scores for all participants of 41.06 ± 4.61, 44.73 ± 9.34, 22.96 ± 4.01, and 26.35 ± 4.19 points, respectively (Table 2).

The intention to use dual contraception was significantly associated with attitude toward dual contraception ( $\beta = -0.292$ ,  $P$ -value < 0.001), self-efficacy in dual contraception ( $\beta = 0.239$ ,  $P$ -value < 0.001), cumulative GPA ( $\beta = 0.178$ ,  $P$ -value < 0.001), and comfortableness with communication on sex-related matters with parents ( $\beta = 0.116$ ,  $P$ -value = 0.007) (Table 3). All factors had direction of associations as it should be based on the conceptual framework. Specifically for attitude toward dual contraception where higher total attitude

**Table 2** Levels of study factors (N = 398).

Factors	N	%
<b>Attitude toward sexual behavior</b> (points)		
Positive (27 – 48 points)	224	56.3
Negative (12 – 26 points)	174	43.7
Range = 15 - 38; mean = 26.75 ± 4.52.		
<b>Knowledge about birth control</b> (points)		
High (9 – 12 points)	242	60.8
Low (0 – 8 points)	156	39.2
Range = 5 - 12; mean = 8.90 ± 1.61.		
<b>Comfortableness with communication on sex-related matters with parents</b>		
High (23 – 32 points)	229	57.5
Low (8 – 22 points)	169	42.5
Range = 8 - 38; mean = 23.03 ± 5.67.		
<b>Attitudes toward dual contraception</b>		
Positive (12 – 41 points)	211	53.0
Negative (42 – 48 points)	187	47.0
Range = 28 - 48; mean = 41.06 ± 4.61.		
<b>Subjective norms of dual contraception</b>		
High (45 – 84 points)	223	56.0
Low (21 – 44 points)	175	44.0
Range = 21 - 66; mean = 44.73 ± 9.34.		
<b>Self-efficacy of dual contraception</b>		
High (23 – 28 points)	205	51.5
Low (7 – 22 points)	193	48.5
Range = 21 - 28; mean = 22.96 ± 4.01.		
<b>Intention to use dual contraception</b>		
High (26 – 30 points)	274	68.8
Low (0 – 25 points)	124	31.2
Range = 15 - 30; mean = 26.35 ± 4.19.		

scores indicated higher likelihood of negative attitude, the  $\beta$  coefficient of -0.292 meant that once scores of the attitude increased by 1 point (i.e., more negative attitude), the scores of the intention to use dual contraception decreased by 0.292 points (i.e., less intention to use dual contraception). Together these four factors could significantly explain 28.1% of the variance of the intention to use dual contraception ( $R^2 = 0.288$ ,  $R^2_{adj} = 0.281$ ,  $F = 7.23$ ,  $P$ -value = 0.007) (Table 3).

**Table 3** Associations between intention to use dual contraception and its predictive factors (N = 398).

Factors	b	Beta	SE(b)	t	P-value
Attitude toward dual contraception	-2.448	-0.292	0.415	-5.896	< 0.001
Self-efficacy in dual contraception	2.004	0.239	0.421	4.765	< 0.001
Cumulative GPA	1.951	0.178	0.471	4.146	< 0.001
Comfortableness with communication on sex-related matters with parents	0.979	0.116	0.364	2.689	0.007
Constant	18.097		1.732	10.865	< 0.001
$R^2 = 0.288$ , $R^2_{adj} = 0.281$ , $F = 7.23$ , $P$ -value = 0.007.					

## Discussions and Conclusion

In this predictive study, the intention to use dual contraception was perceived as high in 68.8% among junior high school female students in Chonburi province of Thailand. This could be because 53.0% of them had a positive attitude toward dual contraception and 51.5% had a high level of self-

efficacy in dual contraception. These two factors could directly influence the intention to perform the behavior based on the Integrative Model of Behavioral Change of Fishbein.<sup>16</sup> The finding is consistent with a study revealing that the intention to prevent pregnancy in male and female adolescents in junior and senior high schools and vocational schools in Saraburi province was at a good level.<sup>17</sup> Even though the results in the previous study<sup>17</sup> were summaries of male and female adolescents together while ours were based solely on female adolescents, age of adolescents in the previous study and our study was comparable.

There have been no studies on the intention to use dual contraception in adolescents with no sexual experience. We therefore needed to compare our findings to studies with female adolescents with sexual experience. The study of Pamuta and colleagues showed that most female students in vocational schools in Chonburi province used protection in their first sexual encounter (84.5%) and 55.7% used dual contraception (55.7%).<sup>15</sup> A study in the US showed that 20.7% of female teenagers and adult women used dual contraception with their last sexual encounter.<sup>33</sup>

Four factors were found to be significant predictors of the intention to use dual contraception. Attitude toward dual contraception was significantly associated with the intention to use dual contraception ( $\beta = -0.292$ ,  $P$ -value < 0.001). The higher the attitude scores (more negative attitude), the lower the scores of the intention to use dual contraception. Therefore, more negative attitude toward dual contraception was associated less intention to use dual contraception among junior high school female students. The finding is consistent with the concept of Fishbein stating that attitude toward behavior influences decision or the success in performing the behavior.<sup>16</sup> The finding is consistent with previous studies.<sup>14,15</sup> As high as 47% of female adolescents in our study had negative attitude toward dual contraception even though it is safe for adolescents. In addition, 8% thought that dual contraception was impossible in adolescents. This could be because social norm sometimes acts as obstacles for condom use among adolescents. Such obstacles were created through the view of stigma of sex education and condom use as inappropriate for adolescents.<sup>34</sup> More than half of adolescents regard less of sex difference have unfavorable attitude toward women carrying condoms as derogative and viewed as prostitutes. Most women are embarrassed to buy condoms in grocery stores or pharmacies.<sup>35</sup> Adolescents also

face the problem accessing contraception service from healthcare providers since they are afraid of harsh judgement from the providers for having sexual encounter.<sup>36</sup> Female adolescents in particular are afraid of being stigmatized and blamed from the society which could lead to their negative attitude toward and further the poor intention to use dual contraception.<sup>37</sup>

Self-efficacy in dual contraception was significantly, positively associated with the intention to use dual contraception ( $\beta = 0.239$ ,  $P$ -value  $< 0.001$ ). The more confidence, the more likely to use dual contraception. To perform any behavior successfully, one has to have skills to do so. This finding is consistent with previous studies.<sup>11,14,15,38,39</sup> Even though adolescents in our study were with no direct sexual experience, as high as 51% had a high level of self-efficacy in dual contraception. This could be because the communication and exchange about sex is viewed as common matter among adolescents. Indirect experiences could be widely exchanged through online communication. All these channels of communication allow adolescents to perceive their capability in dual contraception.

Academic achievement as cumulative GPA was significantly associated with the intention to use dual contraception ( $\beta = 0.178$ ,  $P$ -value  $< 0.001$ ). Female students with higher academic achievement had higher intention to use dual contraception. Individuals with higher intellectual level are more likely to have critical thinking and analysis than those with a lower one.<sup>40</sup> Memorization, understanding and skills accumulated through education allow female adolescents to strengthen their critical thinking and analysis on the importance of to the intention to use dual contraception. Previous studies suggest that individuals with knowledge and skills in safe sex could prevent pregnancy and STDs.<sup>41-43</sup>

Comfortableness with communication on sex-related matters with parents was the last factor significantly associated with the intention to use dual contraception ( $\beta = 0.116$ ,  $P$ -value = 0.007). Communication with parents about sex-related matters acts as the parental monitoring. Such communication helps strengthen conscience of accountability and sex-related value. The conscience could in turn lead the adolescents prohibit themselves from sex risk behavior such as underage sex and unprotected sex. Parental communication about sex could also delay the first sexual encounter, increase contraception rate, and reduce adolescent pregnancy, and reduce STDs.<sup>44</sup> In our study,

57.5% of female adolescents were comfortable to talk with their parents about sex. A systematic review showed that in Thailand parental communication about sexual abstinence with daughters influences the intention to refrain from sex among grade 7 – 9 female students.<sup>44</sup> Previous studies also showed that parental communication about sex has a positive impact on the intention to have safe sex behavior among teenagers<sup>24-26,46</sup> especially female adolescents.<sup>27</sup>

There were three factors unable to significantly be associated with the intention to use dual contraception. Attitude toward sexual behavior was not associated with the intention to use dual contraception. This could be because as high as 43.7% had negative attitude which was close to the 56.3% with the positive one. Such limited variability could cause no difference in the intention to use dual contraception. At present, fast-paced changes in society and environment lead to changes in attitude, value and norm about sex. Female adolescents are more accepting to the relationship with opposite sex and being less sexually preserved. In our study, more than half of the adolescents had a high level of intention use dual contraception (68.8%). This suggested that students with positive and negative attitude toward sexual behavior had similar intention to use dual contraception.

Knowledge about contraception was not associated with the intention to use dual contraception. Adolescents with high and low knowledge had comparable scores of the intention to use dual contraception, despite a 60% of adolescents with a high level of knowledge. The finding is consistent with certain previous studies suggesting that knowledge about STDs and condom were not predictive of predictive of the condom use among senior high school male students.<sup>46</sup> In South Africa, despite 43% of senior high school students who had knowledge about the access to contraception, only 36.4% reported contraception use.<sup>47</sup> These findings indicate that knowledge and concerns do not necessarily always lead to the actual practice of contraception. In addition, most adolescent mothers with repeated pregnancy had a good amount of knowledge about sexual encounter and pregnancy. Yet they hardly practiced contraception and had no intention to prevent pregnancy since they thought that few sexual intercourses could not make them pregnant.<sup>48</sup> Based on the Integrative Model of Behavioral Change)<sup>16</sup> knowledge as a determinant of the behavior is inconclusive about how strong its influence is on the intention and the actual behavior.

Subjective norms of dual contraceptive among female adolescents in our study was not associated with the intention to use dual contraception. Regardless of level of subjective norms of dual contraception, these adolescents had similar intention. Previous study revealed that subjective norms on recommendations from reference persons were not associated with the intention to use contraception.<sup>49</sup> In this study, the answers might not represent their actual perspectives as they had not been told by their parents to use contraception. In addition, their actual experience on contraception use is highly limited. With the desire of freedom, these adolescents might not be influenced by peers or online social media on the contraception methods. Therefore, support from parents, significant others and media could have a low impact on contraception matter. Talking with parents about sex could be viewed as unacceptable in Thai culture and could be limited.<sup>21</sup>

The findings could be applied in high school students as follows. School nurses could promote positive attitude toward dual contraception among female students. The aim is to make them more so that they feel more comfortable and less shamed to learn the matter, to boost the knowledge and skill so they could be confident to use dual contraception. School nurses could also encourage communication between students and parents. Parents should be invited to participate to learn and develop communication skills on the matter. This means to understand more about teenage natural changes, offer teenagers helps when needed, be a good listener, and allow for comfortableness for teenagers to communicate about the matter. These changes could lead to more intention to use dual contraception. In addition, close monitoring on students with low academic achievement should be warranted since they were the ones with a higher risk of unsafe sex. All education should aim at proper prevention on unsafe sex.

This study had certain limitations. With its cross-sectional design, temporal relationship could not be established. Since participants were female students in public junior high school, result generalization to private schools or other sectors could be somewhat limited.

Regarding future research, more studies on comfortableness with communication on sex-related matters with parents between adolescents who live and do not live with parents. Research on programs to promote the intention to use dual contraception should be conducted. Difference in influence of factors affecting the intention to use dual

contraception between students with and without good academic achievement should be examined.

In conclusion, most junior high school female students had a high level of intention to use dual contraception. The intention to use dual contraception was significantly associated with attitude toward dual contraception, self-efficacy in dual contraception, academic achievement, and comfortableness with communication on sex-related matters with parents.

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