

# Correlation of individual characteristics, sexual cognition and sexual abstinence intention among early adolescents \*



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## Abstract

This research consisted of two objectives, namely: 1) was to study the associations among individual characteristics (gender, family relationships, adolescent living arrangements, parents' marital status, sexual value perception, students' opinions about the ideal age for marriage, frequency of internet or social media use and sexual experience) and sexual cognitions that influenced sexual abstinence intention among early adolescents and 2) to develop a guideline for adolescent health services working with families, schools, and communities and apply the outcomes to promote sustainable sexual abstinence intention. A cross-sectional study was conducted using 164 sixth grade students as participants, with data collected through a self-administered questionnaire. Descriptive statistics were used to analyze the general characteristics. The Mann-Whitney U test and Kruskal-Wallis test were used to compare sexual abstinence intentions and demographics, while differences and associations between sexual abstinence intention and sexual cognition were analyzed using Spearman's Rho correlation. All participants met the study criteria and completed the questionnaire.

From the study, it was found as follows: 1. Factors associating with sexual abstinence intention included gender, sexual value, and marital status of the parents. Also, sexual cognition of the adolescents positively correlated with sexual abstinence intention. 2. The findings can be applied as a guideline for adolescent health services working with families, schools, and communities to promote sustainable sexual abstinence intention among early adolescents.

**Keywords:** Correlation; Individual Characteristics; Sexual Cognition; Sexual Abstinence Intention; Early Adolescent

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## Introduction

Over the past decades sexual behavior patterns have changed, with younger ages initiating sexual intercourse (WHO, 2018). The average age of sexual initiation is declining among both genders in many countries around the world (Chokprajakchad, Phuphaibul, and Sieving, 2018; WHO, 2018). Early initiation of sexual intercourse is directly related to adverse health outcomes such as unwanted pregnancies and sexually transmitted infections (Lee et al. 2015). Various studies have highlighted the factors associated with these adverse health outcomes. Contraception and condom use impact risk reduction in the context of safe sexuality, together with avoiding engagement in sexual intercourse through abstinence (Pinyopornpanish et al. 2017), The culture of Thai people promotes sexual abstinence as a healthy approach for early adolescents. To promulgate this strategy, parents, educators, and health care providers require an understanding of the factors related to earlier adolescent abstinence (Neranon et al. 2018).

Sexual abstinence intention (SAI) is determined as delaying early sexual initiation and refraining from sexual intercourse (Neranon et al. 2018). SAI is a reasonable goal for early adolescents, and the best way to prevent negative consequences such as pregnancy and sexually transmitted infections, including HIV among adolescents (Chokprajakchad, Phuphaibul, Sieving, and Phumonsakul, 2020). Adolescents who believe in sexual abstinence values are less likely to engage in sexual intercourse (Alhassan, and Dodo, 2020).

Most studies reviewed focused on exploring the association between sexual risk factors and unprotected sexual intercourse or intercourse with multiple partners in middle and late adolescence (Pinyopornpanish et al. 2017; Morales et al. 2019). Harm reduction means devising policies and programs to lessening undesirable social, economic, and health-related concerns associated with risky sexual behaviors but may not actually rely on sexual abstinence (Srijaiwong, Sindhu, Ratinthorn, and Viwatwongkasem, 2017). Nevertheless, total success could not be reported under either of the frameworks in terms of safeguarding adolescents from the inevitable hazards of engagement in sexual intercourse without protection (Chokprajakchad, Phuphaibul, Sieving, and Phumonsakul, 2020). This literature gap demands attention considering the associations between SAI and early adolescent traits and cognitions about sexual intercourse.

The theory of planned behavior (TPB) guided the study. According to this theory, the association between individual cognition toward positive behavioral attitudes, perceived subjective norms for specific persons, and perceived behavioral control can predict and trigger

behavior modification (Ajzen, 2011). Together, attitudes concerning behaviors, subjective norms and perceived behavioral control indicate the development of intention toward a behavior (Chokprajakchad, Phuphaibul, Sieving, and Phumonsakul, 2020; Morales, A., 2018b)

Adolescent sexual cognition can be defined as thoughts and opinions related to attitudes, perceived about subjective norms, perceived about behavior control and intention about sexual abstinence concerning the influence of sexual behavior in an adolescent group (Department of Health, Bureau of Reproductive Health, 2016; Neranon et al. 2018). Many studies have proposed that attitude toward sexual abstinence, peer norms about abstinence behavior, perceived control (refusal skills), and sexual emotion management skills are the main influences on adolescents' sexual behavior (Sriring, Chanaboon, and Khonroochinnapong, 2014). While, individual characteristics are defined as individual and family-societal factors that influence adolescent sexual behavior. Contexts can shape adolescent behavior in both positive and negative ways (Guilamo-Ramos, Lee, and Jaccard, 2016). Changing social and economic backgrounds are provoking or interesting factors that may encourage adolescents to engage in sexual intercourse during their school years.

Many previous studies identified correlations between gender, sexual value perception, social media, sexual experience, and adolescents' sexual intercourse behavior. Families are among the most important influences on adolescent sexual behaviors (Chaiwongroj, and Buaraphan, 2020). Various studies determined that adolescents frequently engage in sexual risk behavior due to a history of poor family relationships and divorce (Department of Health, Bureau of Reproductive Health, 2016; Settheekul et al. 2019). Parents are an essential resource for adolescents' sexual knowledge and play a significant role in shaping their adolescent child's sexual attitudes, subjective norms, and intentions (Morales, 2019). During early adolescence, children recognize and are influenced by the parts played by parents, friends, and superstars from social media (Chokprajakchad, Phuphaibul, and Phuphaibul, 2016). Previous studies mainly focused on middle and late adolescents (Chokprajakchad, Phuphaibul, and Sieving, 2018), while this study focused on early adolescents. Individual characteristics and adolescents' sexual cognition were utilized to adapt a conceptual framework to predict SAI among early adolescents.

## Objectives of the Research

1. to study the associations among individual characteristics (gender, family relationships, adolescent living arrangements, parents' marital status, sexual value perception,

students' opinions about the ideal age for marriage, frequency of internet or social media use and sexual experience) and sexual cognitions that influenced SAI among early adolescents.

2. to develop a guideline for adolescent health services working with families, schools, and communities and apply the outcomes to promote sustainable sexual abstinence intention.

## Research Methodology

A cross-sectional study was conducted to examine the associations between individual characteristics and perceptions of sexual abstinence intention among early adolescents.

**1<sup>st</sup> Step:** Study Population: The study was conducted at three schools under the Department of Education located in different provinces of Thailand as Bangkok, Chachoengsao and Phetchaburi. The sample was 6th grade primary school students aged 11-12 years. Inclusion criteria for adolescents were the ability to communicate in Thai and parental permission to participate in the study. Sample size was set using a power analysis, with power .80 and significance .05. Sample size from a previous study was used to calculate the average effect size (0.2) (Srijaiwong, 2017), resulting in a sample size of 153 participants. An additional 10% was added to compensate for attrition, giving the total number of participants as 168. Study sites were selected by convenience sampling. Participants were selected systematically, and 164 eligible adolescents were recruited for the study.

**2<sup>nd</sup> Step:** Ethical Considerations: All the adolescents were informed about the research objectives and assured of confidentiality and anonymity. Participants could withdraw at any time. The adolescents and their parents completed informed consent forms. The Ethics Committee on Human Rights at Faculty of Medicine, Ramathibodi Hospital, Mahidol University certified the study. The participants' rights were protected throughout the study.

**3<sup>rd</sup> step:** Study Instruments: Data were collected through a self-administered questionnaire. Content validity of the questionnaire items was checked by five experts comprising three instructors of pediatric nursing, one instructor of family development, and one instructor of child and adolescent psychiatry. The questionnaire was composed of two parts as described below.

3.1) Individual Characteristics were developed by the primary investigator (PI) to gather demographic data and general characteristics of the participants. The instrument contained 8 items for collecting data on gender, family living situation, perceived quality of parent-teen

relationships, student living arrangements, sexual value perception, attitudes about marriage, frequency of internet use and adolescents' sexual experience.

3.2) The Sexual Cognition Questionnaire was developed by Kanokphat Taikhanong (2012) based on the TPB. Permission was obtained from the questionnaire developer to modify the sexual abstinence intention instrument from focusing exclusively on sexual risk behavior to assess the sexual risk cognition of adolescents. Content validity index of the questionnaire was 0.89, with 39 items comprising four parts as follows:

3.2.1) Attitudes toward Sexual Abstinence Behavior was composed of two sub-parts: Behavioral Beliefs in Sexual Abstinence Behavior and Outcome Evaluations in Sexual Abstinence Behavior. Behavioral Beliefs in Sexual Abstinence Behavior was divided into six items, ranked from 1 to 5 (strongly disagree to strongly agree). Outcome Evaluations in Sexual Abstinence Behavior was divided into six items, rated from 1 to 5 (extremely bad to extremely good). Scores were summed, with higher total scores representing stronger attitudes toward sexual abstinence behavior. Cronbach's alpha coefficient was 0.82 for this measure.

3.2.2) Subjective Norms toward Sexual Abstinence Behavior was composed of two sub-parts. Normative Belief in Sexual Abstinence Behavior was divided into seven items, ranked from 1 to 5 (definitely should not to definitely should). Motivation to Comply with Sexual Abstinence Behavior was divided into seven items rated from 1 to 5 (definitely do not to definitely do). Scores were summed, with higher total scores representing stronger subjective norms toward sexual abstinence behavior. Cronbach's alpha coefficient was 0.92 for this measure.

3.2.3) Perceived Behavioral Control about Sexual Abstinence Behavior was composed of two sub-parts. Control Beliefs in Sexual Abstinence Behavior was divided into six items in which scores were ranked from 1 to 5 (very unlikely to very likely). Powers of Control in Sexual Abstinence Behavior was divided into six items with scores ranked from 1 to 5 (strongly disagree to strongly agree). Higher total scores were interpreted to represent stronger perceived control for sexual abstinence behavior. Cronbach's alpha coefficient of this study measure was determined as 0.85.

3.2.4) Sexual Abstinence Intention consisted of 1 item, namely the question, "Do you intend to abstain from sexual intercourse during your school year?" Scores ranged from 1 to 5 (absolutely not to certainly). Lower scores reflected a stronger sexual abstinence intention. Cronbach's alpha coefficient for this study measure was 0.78.

**4<sup>th</sup> step:** Data Collection: All participants were asked to complete a self-administered questionnaire comprising demographic data and sexual abstinence intention.

**5<sup>th</sup> step:** Data Analysis: IBM SPSS Statistics (Version 21.0) was used to perform descriptive and inferential statistical tests. Descriptive statistics were used to describe general characteristics. The Mann-Whitney U and Kruskal-Wallis tests were used to analyze and compare scores between sexual abstinence intention and socio-demographics of early adolescents because data distribution was not normal and did not occur randomly. Differences and associations between attitude toward sexual abstinence behavior, subjective norms about sexual abstinence behavior and perceived behavioral control concerning sexual abstinence behavior and intention about sexual abstinence behavior were analyzed using Spearman's rho correlation.

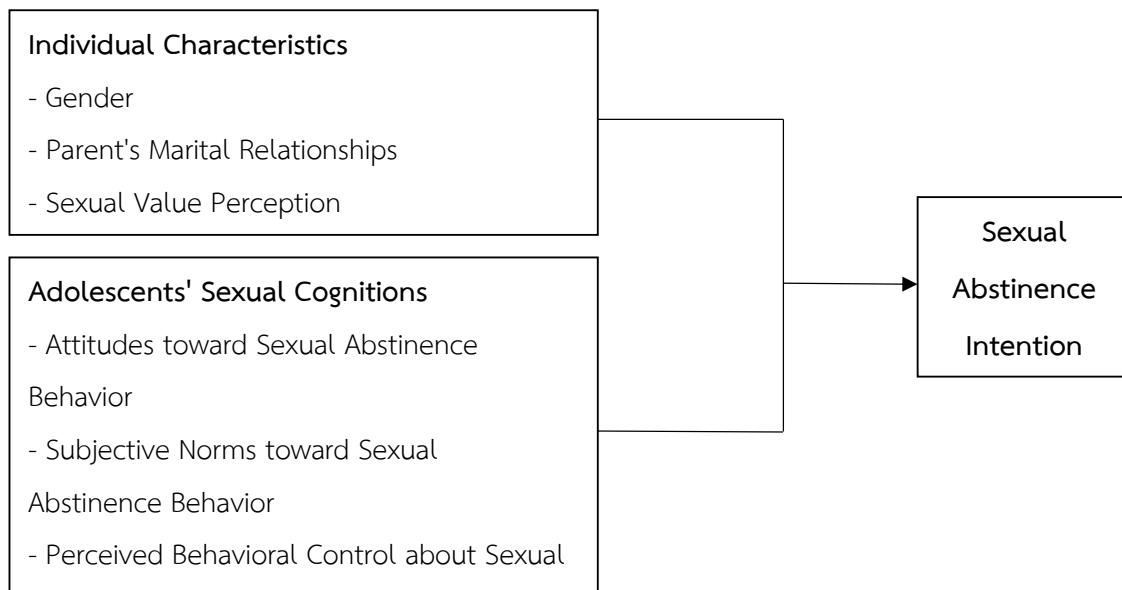
## Research results

The participants were males and females aged 11-12 years. Over half reported that they lived with a parent and had good parent-teen relationships. More than half expressed opinions that the ideal age for marriage was 25 years old. Most students used the internet every day and declared no sexual experience at the time of the study.

**The 1<sup>st</sup> Objective** is to study the associations among individual characteristics (gender, family relationships, adolescent living arrangements, parents' marital status, sexual value perception, students' opinions about the ideal age for marriage, frequency of internet or social media use and sexual experience) and sexual cognitions that influenced SAI among early adolescents. The finding showed the association of SAI among early adolescents in the form of individual characteristics such as gender, parents' marital status, perceived quality of family relationships, student living arrangements, sexual value perception, students' opinions about the ideal age for marriage, frequency of internet or social media use, and sexual experience. Findings indicated that gender and sexual value perception were the most influential factors of SAI ( $Z = -3.82$ ,  $p < 0.001$ ;  $Z = -4.258$ ,  $p < 0.001$ , respectively). Male adolescents were more likely to have sexual intercourse experience than females. Moreover, adolescents were more likely to avoid sexual intercourse if they had a sense of value in keeping virginity until their wedding day. Simultaneously, adolescents whose parents had married status were more likely to have sexual abstinence intention ( $Z = -1.985$ ,  $p < 0.047$ ). Correlations between adolescents' sexual cognitions and sexual abstinence intention, all variables of adolescents' sexual cognitions such as attitudes toward sexual abstinence behavior, subjective norms about sexual

abstinence behavior and perceived behavioral control about sexual abstinence behavior were found to contribute to sexual abstinence intention positively ( $r_s=.340$ ,  $.393$ , and  $.153$ ,  $p < 0.001$ , respectively). Adolescents with higher total scores on attitudes toward sexual abstinence behavior, subjective norms about sexual abstinence behavior and perceived behavioral control about sexual abstinence behavior and intention to avoid sexual intercourse

**The 2<sup>nd</sup> Objective** is to develop a guideline for adolescent health services working with families, schools, and communities and apply the outcomes to promote sustainable sexual abstinence intention. Gender, adolescents whose parents had married status, a sense of value in keeping virginity until their wedding day are related to sexual behavior. Also, adolescents with higher total scores on attitudes toward sexual abstinence behavior, subjective norms about sexual abstinence behavior, and perceived behavioral control about sexual abstinence behavior correlated with intention to avoid sexual intercourse. Therefore, to develop a guideline for adolescent health services working should exploring the effects of substantive characteristics and sexual cognitions included gender, sexual value, and marital status of the parents. Also, sexual cognition of the adolescents positively correlated with sustainable sexual abstinence intention see in figure.



**Figure 1** a guideline for applying the outcomes to promote sexual abstinence intention.



## The New body of knowledge

This article examined the effects of gender, sexual value, and positive marital status on adolescents' cognition of sexual abstinence. Findings provide knowledge concerning the influences of all the variables and the significance of individual variable constructs. The provision of social services to promote sexual health should specifically target early adolescents and consider the role of parents and other important people in their lives. Future studies should examine individual characteristics and factors that influence adolescents' sexual behavior. Different contexts and cultural aspects of other studies will produce diverse results. Effective intervention programs tailored to early adolescents are needed. The focus on delaying sexual initiation has important implications for developing sex education programs. Associated sexual abstinence factors can be used as tools to help young teens avoid early initiation of sexual intercourse. Findings can be used as a resource for policy development in areas of parental and adolescent health education also provide innovative ideas for researchers and educationists in other related contexts.

## Discussion of research results

**Individual Characteristics;** Physical changes associated with puberty are related to certain adolescent sexual behaviors. Increase in sex hormones and the physical changes of puberty increase the risk of sexual activity initiation (Department of Health, Bureau of Reproductive Health, 2016). Common sense tells us these phenomena increase adolescents' sexual desire, sexual attraction to others, and the chances of having sex, especially in males (Skinner et al, 2015). Gender affects the level of sexual risk behavior. Many studies have revealed that the attitudes of Thai male adolescents are associated with sexual experience. Male adolescents believe that the more sexual experiences they have, the greater the acceptance of their fears. Sexual experience makes male adolescents feel more powerful and capable over others, particularly females (Chaiwongroj, and Buaraphan, 2020; Settheekul, 2019). By comparison, Thai females continue to preserve traditions and beliefs about sexual abstinence behavior more than males. Furthermore, the findings of several studies conducted in this field in Thailand revealed that female adolescents are more likely to discuss sexual behavior with their mothers than sons are to discuss the same subject with either parent (Chokprajakchad, Phuphaibul, and Phuphaibul, 2016). Findings of a meta-analysis conducted on sexual communication between parents and adolescents showed that mothers have a

certain degree of protection to offer their daughters against sexual risk behaviors (Pownwattana, and Thammaraksa, 2018).

Individual social contexts largely shape adolescents. One of the most specific factors of influence on adolescent sexual abstinence intention is their family (Guilamo-Ramos, 2016). Moreover, parents are an essential resource for their adolescent child's sexual knowledge and play a significant role in shaping their adolescent child of sexual attitudes, subjective norms, and behaviors (Chokprajakchad et al. 2018). Adolescents tend to develop better behavior in a loving home than those who grow up in families with reverse characteristics (Skinner, 2015). A previous study found that adolescents whose parents have higher-quality relationships may be protected against early sexual initiation (Widman et al, 2016). However, this study did not differentiate between adolescents' perceptions of the quality of family relationships and sexual abstinence intentions ( $Z = -1.009$ ,  $p = 0.313$ ). Adolescents who perceive a higher-quality parent relationship are more likely to follow sexual abstinence than those who perceive a poor connection in their family.

Wedding night virginity remains a high value in Thai culture. Therefore, adolescents' sexual risk behaviors are more likely to be shunned in Thailand. Adolescents who believe in virginity and strictly oppose premarital sex tend to avoid engaging in sexual intercourse or sexual experience (Silva et al, 2016). One previous study examined the factors that influenced sexual risk behavior among adolescents. The sample of this study was 150 secondary school students. Findings showed that perceived values in terms of sexual risk prevention and parental monitoring were associated with adolescent sexual behavior. Results revealed that adolescents who perceive that they should maintain virginity might refuse sexual intercourse during their school years (Hunchangsith, and Sakulsri, 2015).

**Adolescents' Sexual Cognitions;** Adolescents' individual sexual beliefs, values, attitudes, and perceived behavior control are the strongest risks and protective factors (Huntabunjong, 2019). Likewise, many studies determined that adolescent sexual beliefs, attitudes, skills, motivations, norms, and self-efficacy influence sexual behavior in this group (Chokprajakchad et al. 2018; Neronon, 2018).

Attitude determines a sense of belief about the benefits or detriments associated with values on whether things are good or bad (Ajzen, 2011). This factor is a significant predictor explaining the intention for sexual behavior and is affirmed by many studies. One previous study examined samples of 233 first-year students in high schools. The outcome illustrated the predictors of sexual risk behavior as attitudes toward sexual behavior, peer sexual

behavior, and sexual media exposure. These factors accounted for 23.7% of the variance in explaining sexual risk behavior. Findings showed that adolescents engaging in sexual intercourse was positively associated with attitudes toward sexual behavior ( $r_2 = .223$ ) (Pojanapotha et al. 2017).

Perceived norms are defined as the acceptance or rejection of behaviors by reference groups and motivations to meet reference groups' expectations (Ajzen, 2011). Sexual behavior is one of the many areas in which adolescents are influenced by close friends, peers, and parents (Chokprajakchad, 2020). A cross-sectional analysis examined the factors influencing sexual behaviors, no sexual experience, safe sexual practices, and unsafe sexual behaviors among 3,192 Thai adolescents aged 15-19. Results identified sexual risk behaviors, followed by peer approval ( $OR = 1.225$ , 95% CI) and sexual message communication ( $OR = 1.225$ , 95% CI) (Butcharoen, Pichayapinyo, and Pawwattana, 2013).

Perceived behavioral control is defined as an individual's belief in regulating or managing personal behavior with mindfulness concerning the factors either supporting or obstructing certain behaviors (Ajzen, 2011). A previous study examined the factors associated with adolescents' intention to prevent unwanted pregnancy. The samples consisted of 1,327 adolescents aged 12-19 years in secondary schools. The study revealed that perceived behavioral control of sexual risk behavior was related to adolescents' intention to avoid unwanted pregnancy (Chaikoolvatana et al. 2013).

## Conclusions

According, all the variables are indicators of difficult behaviors that people are willing to follow in an expert way, and how much effort they are prepared to make to perform such behaviors. Similarly, when people are expected to succeed, their intentions and the opportunity to achieve results are assumed to be the immediate antecedent of behavior (Ajzen, 2011). In turn, attitude, perceived subjective norm, and perceived behavioral control are determined by the underlying belief structure that comprises behavioral beliefs, normative beliefs, and control beliefs. Thus, the effects of these three determinants on behavior are mediated by behavioral intention (Morales, 2018).

Research limitations included the sampling catchment area as only three public schools in three Thai provinces. Purposive sampling was used to choose regions and school sizes representing large, medium, and small school systems. Generalizations should be made with caution for adolescents with different demographic, geographic and cultural

characteristics. Sexuality is a sensitive issue that is not generally discussed in Thai culture. These results might not accurately reflect actual behaviors if participants have not answered truthfully. Researchers use several strategies to minimize these errors. To maintain confidentiality, each participant had a unique identification number with no direct contact information. All participants were assured that their answers would not affect school grades or other school services. Most adolescents reported strong intentions to be sexually abstinent, reflecting normal behavior in early Thai adolescents (Department of Health, Bureau of Reproductive Health, 2016).

## Suggestions

- 1) The Ministry of Education should have a policy for schools and communities. The directors should have awareness and concern about cooperation between, parents, and students for solving this problem. Sexual cognitions and family relationship should be integrated into the school curriculum.
- 2) Additionally, studies should be conducted from the perspective of parents and their children on the sexual cognition of parents for holistic skills capable of enhancing the body of knowledge on perceived behavior control about sexual abstinence behavior in early adolescents. Finally, future studies should be considered for other persons factors and Buddhist psychology for family responsibilities that influence the sexual behavior of adolescents. Different contexts and cultural aspects might differ from this study. Therefore, effective intervention programs tailored to early adolescents are needed.

## References

Ajzen, I. (2011). The theory of planned behavior: Reactions and reflections. *Psychol Health*, 26(9), 1113-1127.

Alhassan, N., & Dodoo, F.N.A. (2020). Predictors of primary and secondary sexual abstinence among never-married youth in urban poor Accra, Ghana. *Reproductive Health*, 17(1), 28.

Butcharoen, W., Pichayapinyo, P., & Pawwattana, A. (2013). Factors related to sexual risk behavior among Thai secondary school students. *Journal of Public Health*, 42(1), 30-40.

Chaikoolvatana, C. et al. (2013). Development of a school-based pregnancy prevention model for early adolescent female Thais. *Pacific Rim International Journal*, 17(2), 131-147.

Chaiwongroj, C., & Buaraphan, K. (2020). Development and effectiveness assessment of a sex education learning unit for Thai primary students. *Journal of Health Research*, 34(3), 183-193.

Chokprajakchad, M., Phuphaibul, R., & Phuphaibul, P. (2016). Relation between viewing "Hormones" TV Series\* and behaviors among Thai adolescents. *Thai Journal of Pediatric*, 55(1), 65-71.

Chokprajakchad, M., Phuphaibul, R., & Sieving, R. E. (2018). Sexual health interventions among early adolescents: an integrative review. *Journal of Health Research*, 32(6), 467-477.

Chokprajakchad, M., Phuphaibul, R., Sieving, R. E., & Phumonsakul, S. (2020). Effectiveness of parent participation in a technology-based adolescent sexuality education program: a randomized control trial. *Pacific Rim International Journal*, 24(2), 219-233.

Department of Health, Bureau of Reproductive Health. (2016). *The reproductive health situation in an adolescent*. Nonthaburi: Bureau of Reproductive Health.

Guilamo-Ramos, V., Lee, J. J., & Jaccard, J. (2016). Parent-adolescent communication about contraception and condom use. *JAMA Pediatric*, 170(1), 14-16.

Hunchangsith, P., & Sakulsri, T. (2015). *Risk factors influencing teenage pregnancy: a qualitative study. Family and Pregnancy*. Institute for Population and Social Research, Mahidol University (pp. 163-180).

Lee, S.Y. et al. (2015). Sexually transmitted infections and first sexual intercourse age in adolescents: the nationwide retrospective cross-sectional study. *The Journal of Sexual Medicine*, 12, 2313-23.

Morales, A. et al. (2018). Sexual risk among Colombian adolescents: knowledge, attitudes, normative beliefs, perceived control, intention, and sexual behavior. *BMC Public Health* 18, 1377. From <https://doi.org/10.1186/s12889-018-6311-y>.

Morales, A. et al. (2019). Adaptation of an effective school-based sexual health promotion program for youth in Colombia. *Social Science & Medicine*, 222, 207-215.

Neranon, W., Phuphaibul, R., & Kongsaktrkul, C. (2018). Effects to the activity package computer game media on attitude norm and perceived behavior control on sexual abstinence of 7th grade students. *Kuakarun Journal of Nursing*, 25(1), 73-98.

Pinyopornpanish, K. et al. (2017). Sexual health, risky sexual behavior and condom use among adolescents young adults and older adults in Chiang Mai, Thailand: Findings from a population based survey. *BMC Research Notes*, 10, 682.

Pojanapotha, P., Singhakant, S., Kaewpornsawan, T., & Apinuntavech, S. (2017). Attitudes and sex education associated with sexual behavior in Thai male students in Bangkok. *Journal of Public Health*, 47(1), 18-30.

Powwattana, A., & Thammaraksa, P. (2018). Culturally-grounded mother-daughter communication-focused intervention for Thai female adolescents. *Nursing & Health Sciences*, 20(2), 214-223.

Settheekul, S. et al. (2019). Factors influencing sexual risk behaviors among adolescents: a community-based participatory study. *Nursing & Health Sciences*, 21(2), 186-197.

Silva, R. N. et al. (2016). Mother-and father-adolescent relationships and early sexual intercourse. *Pediatrics*, 138(6), 1-9.

Skinner S. R. et al. (2015). Childhood behavior problems and age at first sexual intercourse: a prospective birth cohort study. *Pediatrics*, 135, 255–263.

Srijaiwong, S., Sindhu, S., Ratinthorn, A., & Viwatwongkasem, C. (2017). Factors Influencing Sexual Behaviors among Thai Adolescents. *Journal of Population and Social Studies*, 25(3), 171-193.

Sriring, P., Chanaboon, S., & Khonroochinnapong, K. (2014). *Knowledge, attitudes, intention and factor effecting intention in prevention of unplanned pregnant and having safe sex between Teenagers in Khon Kaen Province*. Rethink: Social Development for Sustainability in ASEAN Community (pp. 470–477).

Taikhanong, K. (2012). The factors influencing of the intention of sexual risk behavior amongst high school students. *Christian University of Thailand Journal*, 17(1), 168-193.

Widman, L. et al. (2016). Parent-adolescent sexual communication and adolescent safer sex behavior: a meta-analysis. *JAMA Pediatric*, 170(1), 52-61.

World Health Organization. *Report on Global Sexually Transmitted Infection Surveillance 2018*. Geneva, World Health Organization. Retrieved February 3, 2021, from <https://www.who.int/reproductivehealth/publications/stis-surveillance-2018/en/>