Prevalence and factors associated with safe sex behaviors among adolescent vocational students in Nakhon Ratchasima Province, Thailand

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พฤติกรรมทางเพศที่ปลอดภัย และปัจจัยที่เกี่ยวข้องในนักเรียนอาชีวศึกษาวัยรุ่น จังหวัดนครราชสีมา ประเทศไทย

นางมณีบงกช เชาว์มะเริง

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มณีบงกช เชาว์มะเริง : พฤติกรรมทางเพศที่ปลอดภัย และปัจจัยที่เกี่ยวข้องในนักเรียนอาชีวศึกษาวัยรุ่น จังหวัดนครราชสีมา ประเทศไทย. (Prevalence and factors associated with safe sex behaviors among adolescent vocational students in Nakhon Ratchasima Province, Thailand) อ.ที่ปรึกษาหลัก : อเลซซิโอ พันซ่า

โรคติดต่อทางเพศสัมพันธ์ และการติดเชื้อ เอช ไอ วี ยังคงเป็นปัญหา สาธารณสุข ในกลุมวัยรุ่นนี้ ดังนั้นการวิจัยนี้จึงต้องการศึกษาพฤติกรรมทางเพศที่ปลอดภัย และ ปัจจัยที่เกี่ยวข้องในนักเรียนอาชีวศึกษาวัยรุ่น จังหวัดนครราชสีมา ประเทศไทย

วิธีการศึกษา: การศึกษาภาคตัดขวางในอาสาสมัครนักเรียนอาชีวศึกษา จำนวน 332 คน ในระหว่างเดือน สิงหาคม ถึงตุลาคม เก็บข้อมูลโดยอาสาสมัครตอบ วิเคราะห์ข้อมูลโดยสถิติเชิงพรรณนา การทดสอบไคสแคว์ และการวิเคราะห์การถดถอยโลจิสติกพหุกลุ่ม เพื่อหาความสัมพันธ์และปัจจัยที่เกี่ยวข้องกับพฤติกรรมทางเพศที่ปลอดภัยในนักเรียนอาชีวศึกษาจังหวัดนครราชสีมา

ผลการศึกษา: พบว่ามีกลุ่มเป็น 2 กลุ่ม แบ่งเป็นกลุ่มนักเรียนชาย 57.8% และกลุ่มนักเรียนหญิง 42.2% อายุเฉลี่ย 16.80

ปี เฉลี่ยประมาณ 60 % ในกลุ่มเด็กชายและ50% ในกลุ่มเด้กหญิงมีเพศสัมพันธ์ อายุเฉลี่ยอยู่ที่ 15 ปี ประมาณ 63.1% ใช้ถุงยางอนามัย และ 63.6% ใช้วิธีการคุมกำเนิด ในการมีเพศสัมพันธ์สุดท้าย โดยประมาณ 41.9% ดื่มเครื่องดื่มที่ ผสมแอลกอฮอล์ และ15% ใช้ยาเสพติด จากการวิเคราะห์พหุตัวแปร พบว่าปัจจัยที่สัมพันธ์ต่อพฤติกรรมทางเพศที่ปลอดภัยอย่างมีนัยส าคัญได้แก่ ความรู้เรื่องการคุมกำเนิด (OR = 0.298, 95%CI= 0.47 -0.57) ทัศนคติทางด้านบวกเกี่ยวการเจริญ พันธุ์ (OR=0.165,95%CI= 3.32-6.71 (p<0.001)มี พฤติกรรมเสี่ยงระดีบสูง (OR = 0.24, 95%CI= 0.09-0.58). และระดับต่ำ (OR = 0.45, 95%CI= 0.219-0.911) และ การปัจจัยจากสิ่งแวดล้อมภายนอกมีผลต่อการใช้ยาคุมกำเนิด (OR=0.43, 95%CI= 0.22-0.86)

ส รุ ป : จากการศึกษาครั้งนี้พบว่า ความรู้เรื่อง เอช ไอ วี เอดส์ และโรคติดต่อทางด้านเพศสัมพันธ์ ยาคุมกำเนิด และวิธีการใช้ ของนักเรียนอาชีวศึกษาวัยรุ่น จังหวัดนครราชสีมาอยู่ในระดับต่ำ ควรมีการพัฒนาหลักสูตรสูตร เกี่ยวกัยสุขศึกษาเรื่องเพศสัมพันธ์ ในวิทยาลัยอาชีวศึกษา เพื่อจัดให้บริการการเรียนรู้แก่นักเรียน

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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Background: Premature sexual intercourse among adolescent can be linked to HIV and sexual transmitted diseases and unintended pregnancy. This study aimed to determine the prevalence and factors associated with safe sex behaviors among adolescent vocational students in Nakhn Ractchasima province, Thailand.

Methods: A cross-sectional analytical study(n=332) was conducted from August-October 2018 by using self-administered questionnaire. Bivariate (Chi-square test) and multivariate analysis (logistic regression) were performed to identified the factors associated with safe sex behaviors among adolescent vocational students in Nakhon Ratchasima province, Thailand.

Results: finding revealed that the participants were male 57.8% and female 42.2%with an average age of 16.80 years (±1.7). Approximately 60.% of male and 50% of female had experience of sexual intercourse , with their first experience of sexual intercourse at the average age of 15 years old. Most respondents 63.1 % used a condom and 63.6% used contraception in their latest sexual intercourse. About 41.9% consumed alcohol and 15% was due to substance abused. Sexual intercourse among adolescents vocational students were significantly associated with knowledge of contraception (OR = 0.298, 95%CI= 0.47 -0.57), Positive attitude towards reproductive health (OR=0.165,95%CI= 3.32-6.71), with low risk behavior (OR = 0.45, 95%CI= 0.219-0.911), and high risk behaviors (OR = 0.24, 95%CI= 0.09-0.58). Contraceptive used in the latest sexual intercourse was significant association with cues to action (OR=0.43, 95%CI= 0.22-0.86)

Field of Study: Public Health Student's Signature .....

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CHAPTER 1

INTRODUCTION

1.1 Background and Rationale

1.1.1 International Background Information

Globally around 1.2 billion people, or 1 in 6 of the world's population, are adolescents aged 10 to 19 (World health Organization, 2018). Adolescent makes up about 19% of the region's total population. Over 60% of the world's youth live in Asia-Pacific. This translates into more than 750 million young women and men aged 15 to 24 years (UNFPA, 2015). Adolescence is the critical life stage that marks the transition from childhood to adulthood. It is a time of rapid growth and development leading to physical and sexual maturity (UNFPA, 2015).

Illnesses can hinder their ability to grow and develop to their full potential. Alcohol or tobacco use, lack of physical activity, unprotected sex and/or exposure to violence can jeopardize not only their current health, but also their health as adults, and even the health of their future children.(World health Organization, 2018). The main health issues of adolescents are early pregnancy and childbirth. The leading cause of death for 15– 19-year-old girls globally is complications from pregnancy and childbirth.(World health Organization, 2018). Approximately 16 million girls aged 15 to 19 years and 2.5 million girls under 16 years give birth each year in developing regions (World Health Organization (WHO, 2018).

Restrictive law and policies also prevent adolescents face barriers to accessing contraception including stigma surrounding non-marital sexual activity and/or contraceptive use.

Family planning, globally in 2015, 57 percent of married or in-union women of reproductive age used a modern method of family planning, constituting 90 percent of contraceptive users. When users of traditional methods are counted as having an unmet need for family planning, 18 percent of married or in-union women worldwide are estimated to have had an unmet need for modern methods in 2015.(UN 2015). Contraceptive use helps couples and individuals realize their basic right to decide freely and responsibly if, when and how many children to have. The growing use of contraceptive methods has resulted in not only improvements in health-related outcomes such as reduced maternal mortality and infant mortality (UN 2015).

Information gathered in 2002 showed that of the total number of abortions recorded, 14% corresponded to adolescents of 15–19 years of age in developed countries; 26% corresponded to Africa, 8% to Asia and 15% to Latin America and the Caribbean (United Nations, World Youth Report, 2005). Some studies also revealed 3.4% and 1.4% HIV prevalence rates among women and men, especially in Sub-Saharan Africa in

2009 (Mavedzenge, Olson, Doyle, Changalucha, & Ross, 2011). Female teenagers and young women aged 15-24 years have high risk of HIV infection, calculated for 20% of new HIV infections among adults globally in 2015, although calculating for just 11% of the adult population. Young females and girl teenagers calculated for 25% of new HIV infections among adult, and females calculated for 56% of new HIV infections among adults in Sub-Saharan. Distribution of new infection of HIV among adults showed 27 % for women aged > 25 years old, 39% for men aged > 25 years old, but 20% for female aged 15-24 years old and 14% for men aged 15-24 years old by age sex in global (UNAIDS, 2016).

The other studies indicated that youth responses of the first sexual act revealed as below 25.2% curiosity, 36.1% marriage, 19.9% peer pressure, 1.4% alcohol or substance use influence. Sexual behavior revealed that 71.6% had taken sexual act in the last 12 months. For substance use, the adolescent had taken sexual intercourse under the influence of substance use, listed as alcohol and cigarette approximately 68.8% (Tadesse & Yakob, 2015). For sexually active behaviors among girl, teenagers had been reported 62.1% for not use and inconsistently condom use, 54.6% having multiple sexual partners (two or more partners), 99.4% for substance use, 73.3% for watched pornography, and 42% for sexual intercourse without condom use. Once or more sexual risk behavior had shown 70.7% of the participants, calculating of 98.8% of those who had sexual activity in the last 12 months form 711 respondents in the research (Tadesse & Yakob, 2015).

One in seven girls in the region has given birth by the age of 18, often in the context of high unmet need for contraception and child marriage, with more than a third of girls married before their 18th birthday. Up to 63% of adolescent pregnancies in the region are unintended, contributing to a significant, although the underreported burden of unsafe abortion (UNFPA, 2015). How successfully young people navigate this transition has enormous implications for their current and future health and well-being, and that of their families and communities. It is during adolescence that young people develop the physical capacity to have sex and reproduce. They also experience an increasing interest in sex, learn social and relationship skills, develop their own sexuality and sexual identity, and, for many, adolescence marks the onset of sexual activity.

Thailand and the Philippines have demonstrated an association between delayed sexual initiation and having a close relationship with parents. Education is protective against a range of health risk behaviors, including higher risk sexual behavior. First marriage and first sex for adolescent girls in many settings. Young people who attend school are more likely to delay sexual debut, have better perception of their own risk related to STIs, and are more likely to practice safer sex. For example, a study of 1360 adolescents aged between 14 and 19 in Lao PDR demonstrated that school attendance reduced the odds of risky sexual behavior

(including sexual debut less than 15 years, multiple partners, non-use of condoms) for both boys (Odds Ratio (OR) 0.53) and girls (OR 0.17).

African American college students are among the age group of African Americans with significantly higher heterosexual transmission of HIV. It has been projected that young African Americans of college age will be the next group to be affected by the HIV/AIDS epidemic. The results yielded the following themes: for males and females, the combined themes, negative views of condoms were ranked the most important with a score of 70. Trust issues were ranked the second most important with a total score of 47. The third highest ranked theme was living for the moment with a total score of 43. The fourth highest ranked theme was feeling invincible with a total score of 42. The authors provide a number of recommendations for consideration in the development of HIV prevention programs for African American college students. (Duncan et al., 2002)

In 2014, the prevalence of HIV among pregnant women aged 15-24 years and male military recruits is about 0.5%. Persons with high risk of HIV who are in the reproductive age groups has not changed significantly in recent years. The 2014 round of the behavioral surveillance (BSS) found that based on data of Directorate General CDC and Environmental Health of Ministry of Health of Republic of Thailand, the rate of new HIV-AIDS infections showed 32,711 of HIV infection and 7,864 of AIDS in 1 January-31 March 2016. The total of cumulative cases revealed 900 cases for aged 5-14 years old, 2,208 cases for aged 15-19 years old, and 24,628 cases for aged 20-29 years old from 1 April 1987 until 31 March 2016 (MOH, 2016).

1.1.2 Background Information in Thailand

Over the last four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income country to an upper-income country in less than a generation. As such, Thailand has been one of the widely cited development success stories, which sustained strong growth and impressive poverty reduction, particularly in the 1980s.

Thailand's economy grew at an average annual rate of 7.5% in the boom years of 1960 to 1996 and 5% following the Asian financial crisis during 1999-2005, creating millions of jobs that helped pull millions of people out of poverty. Gains along multiple dimensions of welfare have been impressive: more children are now getting more years of education, and virtually everyone is now covered by health insurance while other forms of social security have expanded. After average growth slowed to 3.5% over 2005-2015, with a dip to 2.3 % in 2014-2016, Thailand is now on the path to recovery. Economic growth reached 3.9% in 2017 - the best growth performance since 2012 - and is expected to expand further to 4.1% in 2018(World Bank, 2018).

In Thailand, the total population of adolescents aged between 10-19 years is around 8,147,206 and 13.25 percent of the total population. The highest number of adolescence is around 693,370 that are living in Bangkok, the second was in Nakhon Ratchasima (300,000) and Ubon Ratchathani (250,000) respectively (National Statistical Office of Thailand, 2015). Although this age group is a sexually active

group, their sexuality is strictly restricted by social, moral and religious beliefs. According to eastern cultures, receiving reproductive health service is perceived as a shameful subject for unmarried people. Actual condom use for the last sexual intercourse for male was 67.4 % and females 61.8 %. For contraceptive use for male was 74.0 % and for female 75.0 %, compared to high school student year 11, condom use for the last sexual intercourse was 75.0 % and female 67.7% for contraceptive use for male was 75.9% and female for 77.8% (Reproductive Health Department, Ministry of Public Health, 2015).

Technical and vocational education is another opportunity for students who completed year 9 in junior high school. Students undertake a three-year Vocational Education Certificate (Por Wor Chor), which is equivalent to grade 12 in the academic stream. For further study, vocational students can choose to follow this with two-years Vocational Education Diploma (Por Wor So)(Hawley, 2003). Furthermore, the provision of vocational study has extended to bachelor degree in some area such as engineering, computer sciences, Information and Communication Technology, Business Administration, and Tourism and Hospitality (Office of the vocational Education Commission, 2018)

In Thailand context, the adolescence population is vulnerable to teenager health problems. National survey of health problem of adolescent revealed that 10 percent of females aged 15-24 years old are smoking, 5 percent having alcohol, and 1 percent having drugs, while males have more risk, like 80 percent are smoking, 40 percent having alcohol, and 4 percent having drugs (National Statistical Office of Thailand, 2015).

Less contraceptive knowledge and utilization lead to not only unwanted pregnancy and abortion but also sexually transmitted infections and HIV/AIDS. In 2015, there were over two hundred thousand people living with HIV in Thailand, and 34% that population was female. Condoms can be seen for men to use when they have sex with sex workers but rare to use as a birth spacing method. A study on youths in Thailand found out that 11.9% of youths had premarital sexual relationship but consistent condom use among male was only 36.6% and 23.0% never used condoms. The study in Bangkok also proved that unmarried women had less contraceptive knowledge compared to married participants. This is due to a lack of contraceptive information and reproductive health-related educational resource for unmarried and young female. Furthermore, it is also mentioned that the hostile manners of service providers towards unmarried women who came to receive service or ask questions which are related to reproductive health knowledge.

Since Thailand has strong cultural and social norms concerning pre-marital sex, providing contraceptive knowledge and services are challenging to both service providers and unmarried youths. Although the public and private sectors listed as local and international non-government organizations are providing RH services, vocational students (unmarried youths) are still in need to increase correct

contraceptive knowledge and utilization. There are strong incentives for addressing young people's SRH. Globally, young people aged 15-24 experience the highest rates of sexually transmitted infections (STIs) of any age group, and accounted for 42% of new HIV infections in 2010. An estimated 16 million girls aged 15-19 give birth every year, representing 11% of all births but almost a quarter of the ill health related to pregnancy and childbirth, including the consequences of unsafe abortion.

In all countries, girls living in rural areas, those with less education, and girls from poorer households are more likely to be married or in the union. Child marriage is not only a violation of girls' rights but also has significant health, gender, and socioeconomic consequences. Early marriage is associated with an increased risk of early pregnancy, STIs (including HIV) and gender-based violence, and is also a critical factor in girls' low educational attainment. In Thailand, 56% of young women (15-24 years) living in a slum in Bangkok were sexually active, and 42% have had sex without a condom. Early pregnancy (<18 years of age), whether intended or unintended, is associated with poor maternal and perinatal health outcomes. The highest rates of early childbearing occur in South Asia and Oceania where almost one in five and one in 10 girls gave birth before 18, compared with one in 15 in South-East Asia. Other studies also suggest high rates of abortion among adolescents in Thailand, an estimated 14% of all adolescent pregnancies ended in abortion in 2010. In Thailand, the pregnancy rate for 15-19 year-olds was 33.4 per 1,000 and abortion was the outcome for 14.4%, (18.0% of all abortions) (Areemit et al., 2002). The adolescent birth rate was 42.5 in women 15-19 years of age on average, there were 188.8 adolescent deliveries per day. Adolescents gave birth to 37.2% of all preterm infants the preterm birth rate was significantly greater than in women in the optimum reproductive age. Most deliveries were spontaneous vertex deliveries with lower complications and mortality rates than for women in the optimum reproductive age. A nationally representative study of unmarried women 15-19 in China reported that 17% of sexually active adolescents had experienced a premarital pregnancy and 91% ended in abortion.

1.2 Rationale

The results show that vocational schooling offers consistently higher returns for men and women at the secondary and post-secondary levels. However, the returns to vocational and academic credentials vary substantially, both by gender and year. The primary conclusion that vocational schooling offers a higher private rate of return should be tempered by the understanding of the long run decline in value of some vocational credentials and the potential growing importance of all post-secondary degrees.

Though Thailand is classified as an upper middle-income country, with aspirations to reach a fully developed status in the next 20 years, the statistics on

teenage pregnancy remain high. About 1.6 million babies were born to teenage mothers over the last 15 years, with a 54 percent increase from 2000 to 2014. In 2016 alone, some 14.2 percent of all pregnancies nationwide were to adolescents, with live births in this category coming in at just under 95,000 (United Nation Population Fund (UNFPA), 2017). The result of this study can be an evidence for the local government to improve the educational regulation and prevention program to revise sex and HIV-AIDS education programs.

Although Nakhon Ratchasima province has medical facilities with qualified doctors, inequalities are found in health care between urban and rural areas. Majority of people are living in rural areas.

A systematic search was conducted using PubMed in December 2017. The search strategy aimed to identify all articles in which the health belief model had been applied and which had been published between January 2000 and March 2018 in English or Thai. The search term of youth or adolescence and safe sexual behavior, in school, vocational college and Thailand yielded a total of 128 articles. Five researchers independently reviewed the retrieved articles for possible inclusion using a three-step selection process (1. title/author, 2. abstract, 3. full text) with pre-defined inclusion and exclusion criteria for each step. Twenty-six studies met all of the inclusion criteria and were used for analysis. A data extraction form was developed to collect information from articles based on categories including author, title, population description, the aim of the study, methodological approach, use of the Health Belief model, applied model version, and main results. However, two previous studies among vocational student were conducted in the Northern part of Thailand.

To summarize, there are few types of research to access prevalence and factors associated with safe sex behaviors among vocational students particularly in the urban, suburban and rural area of Nakhon Ratchasima province.

1.3 Research questions

1. What are the modifying factors associated with safe sex behavior among vocational students in Nakhon Ratchasima Province, Thailand?
2. What are the perceptions towards safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand?
3. What are the cues to action and self- efficacy associated with safe sex behavior among vocational students in Nakhon Ratchasima province, Thailand?
4. What is the prevalence of safe sex behavior among vocational students in Nakhon Ratchasima province, Thailand?

5. Is there any association between modifying factors, perceptions, cues to action, self- efficacy and safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand?

1.4 Research objectives

General objective

To describe the prevalence and factors associated with safe sexual behavior among vocational students in Nakhon Ratchasima Province, Thailand.

Specific objectives

1. To determine the modifying factors listed as socio-demographic characteristic, the level of HIV and STIs knowledge, attitude towards reproductive health, and safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

2. To identify the level of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers associated with safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

3. To assess the cues to action and self- efficacy associated with safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

4. To determine the prevalence of safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

5. To identify the association between modifying factors, knowledge of HIV and STIs perceptions cues to action, self- efficacy and safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

1.5 Research Hypothesis

Null Hypothesis

There is no association between modifying factors, knowledge of HIV and STIs, perceptions cues to action, self-efficacy towards adolescence safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

Alternative Hypothesis

There is an association between modifying factors, knowledge of HIV and STIs, perceptions cues to action, self- efficacy towards adolescence safe sexual behavior among vocational students in Nakhon Ratchasima province, Thailand.

1.6 Conceptual Framework

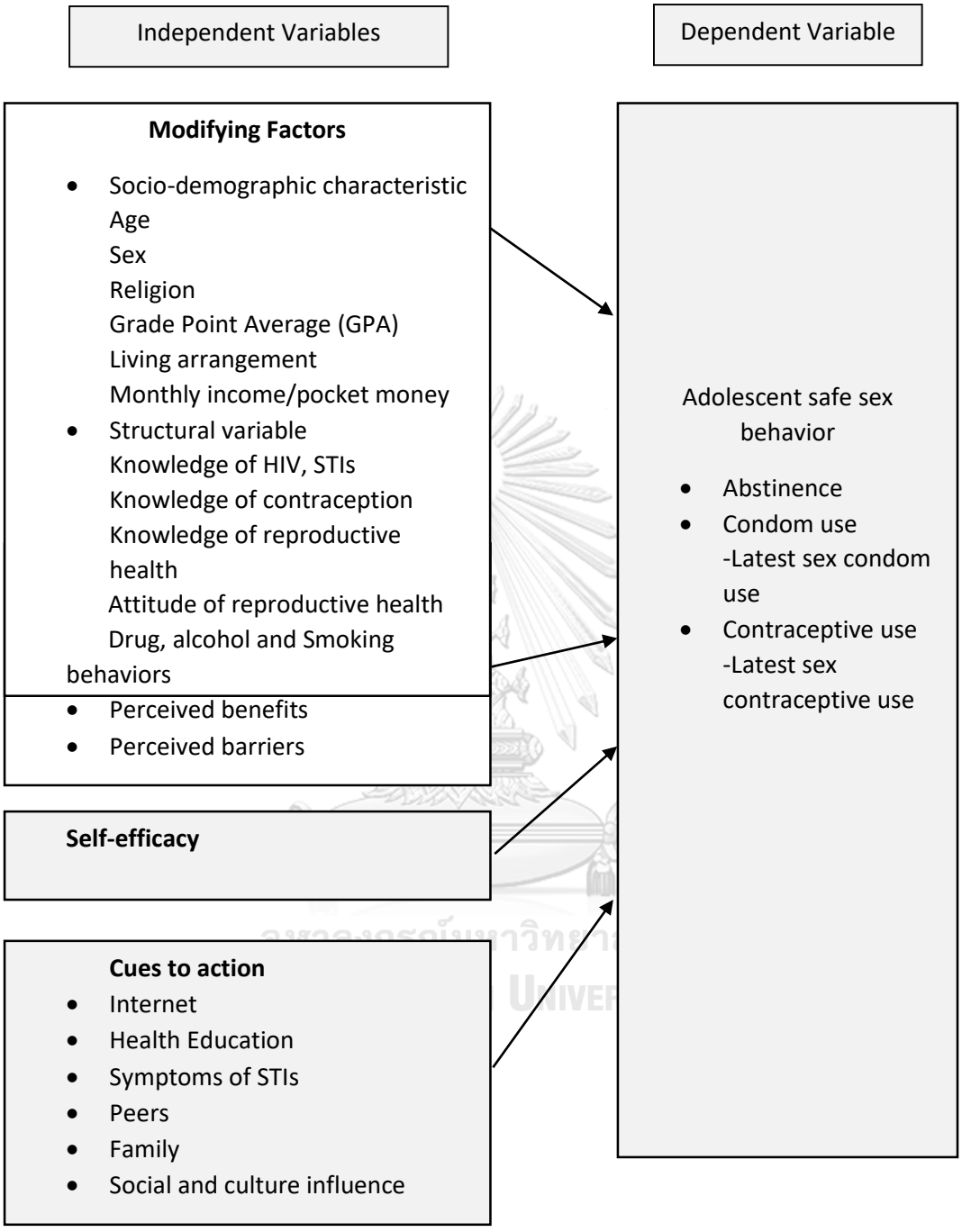

Figure 1 conceptual framework

1.7 Operational Definition

1.7.1 Modifying Factors

In this study, the operational definition refers to:

17.1.1. Socio-Demographic Characteristic

- **Age**: how old the participant is at the time of last birthday by the self-report method.
- **Sex**: male or female, the participants' sex characteristics by the self-report method.
- Religion: the self-report method of participant's religion concerning Buddhist, Christian, Muslim, Hindu and others attended in any religious services and average time.

- **Grade Point Average (GPA):** the result of an academic performance previous year of participants as a range from 1-4 level, 1-2.50, 2.51-3.0, 3.01-3.50, 3,51-4.00.

- **Living Arrangement:** the participant staying with parents, any family member, relative or friend or others during the participants attending the college by the self-report method.
- **Monthly Income**: the participant's own income in college in baht per month. Classified up to 5000 baht or more than 5000 baht according to the minimum cost of living in Nakhon Ratchasima province.

17.1.2 Structural Variables

- **Knowledge of HIV and STIs:** participant's knowing and understanding about the difference of HIV and AIDS, the transmission of HIV and STIs, treatment of infected HIV, including basic knowledge of STIs, with familiarity gained through experience or education. Three levels of knowledge as poor, fair, and good level of knowledge are determined by using HIV and STIs knowledge questions.
- **Knowledge of Contraception;** participants knowing and understanding of contraceptive methods both modern and traditional methods, and how to use them with familiarity gained through experience or education. Three levels of knowledge as poor, fair, and good level of knowledge are determined by using contraceptive knowledge questions.
- **Knowledge of reproductive health:** participants understand the basis of reproductive health listed as sexual behavior and its consequence including reproduction.
- **Attitude towards reproductive health**; participants' subjective judgment on sexual behavior and contraceptive utilization.

- **Drugs, alcohol, and smoking behaviors**: define as participants behaviors of using drugs including the reason of using them, alcoholic drink, and cigarettes smoking including the reason of using drugs.
- **Sexual harassment:** the experience of sexual harassment with physical and mental harassment.
- **Communication skills**: participants able to communicate with peer, family and sex partner regarding sexual behavior.

17.2 Perceptions

- **Perceived susceptibility**: refers to Rosenstock's definition which defines as participant's subjective perception of the risk of acquiring an illness of HIV, AIDs consequence of unhealthy sexual practice.
- **Perceived severity**: refers to Rosenstock's definition which defines as participant's comprehension on the seriousness of diseases that causes negative health condition listed as HIV /AIDS.
- **Perceived benefits**: refers to Rosenstock's definition which define as a participant's understanding of the effectiveness of various actions available to reduce and prevent the threat of HIV/AIDS and STIs by using a condom.
- **Perceived barriers**: refers to Rosenstock's definition which defines as a participant's feelings on the difficulty to perform a recommended health action listed as using condom and contraceptive during or after sexual intercourse.

17.3 Self-efficacy – This refers to Rosenstock's definition which to the level of a person's confidence in his or her ability to avoid sex and, using condom.

17.4 Cue to action – This refers to Rosenstock's definition this is the stimulus needed to trigger the decision-making process to accept a recommended health action. These cues can be internally defined as yourself experiencing or externally listed as media, peers, family, sex partner.

- **Internet**: objectives of the participant using the internet, chat room and pornography for scientific information, condom use, contraception, and dating that relates to sexual behavior.
- **Health education:** participants received health education from whom listed as a health professional, family, and peers regarding safe sex behavior defined as abstinence, condom use, and contraceptive use.
- **Symptoms:** participants and peers experience the symptoms of STIs.
- **Peers:** participants received pressure from friends to adopt safe sex activities or avoid to have sexual behavior till late.
- **Family:** participant received pressure from family style defined as: very strict, average and relaxed.

- **Social and culture influence**: Adolescence relationship with the Thai community and Thai Culture

Dependent Variables

17.5 Adolescent safe sex behavior: practicing sexual intercourse of adolescents, this study was classified into the 3 groups for active and abstinence sexual practice based on Thai context.

- **Abstinence**: participants never engaged in any sexual intercourse defined as safe sex.

- **Condom us:** participants actual use condom correctly at their latest sexual intercourse.

- **Contraceptive use:** actual use of contraceptive methods at the latest sexual intercourse by two types of contraceptive utilization listed as the traditional contraceptive, listed as withdrawing before ejaculation and avoid fertility period was considered as unsafe sex.

CHAPTER 2

LITERATURE REVIEW

2.1 Modifying Factors

2.1.1 Socio-demographic Characteristics

Socio-demographic characteristics are important in sexual behavior among adolescents. This is because cultural influences, norms, community beliefs, and health-seeking behavior have great influence on personal perception and health service utilization. Access to appropriate reproductive health service is mostly influenced by community beliefs and cultural norms**.**

Reproductive health care comprises the constellation of methods, techniques and services that contribute to reproductive health and well-being by preventing and solving reproductive health problems. This also includes sexual health, the purpose of which is the enhancement of life and personal relations, and not merely counseling and care related to reproduction and sexually transmitted diseases (WHO, 2011). Thereby, understanding audiences' perspectives related to socio-demographic characteristics listed as age, sex, religion, culture and some underlying determinants in order to provide appropriate reproductive health service for the people. This is because their utilization of RH service varies to different socio-demographic factors

2.1.1 Age

Age is a significant determinant of sexual behavior. Among the various age groups, adolescence shows the critical life stage to transit from the child's dependence on the independence of adulthood, and they are more vulnerable than other age groups. Therefore, adolescences have a greater chance to enter risks and challenges during their transition. They also experience the change of physical and mental well-being that need to direct to a positive impact on length and quality of their lives As this age group also experience an interest in sex and develop their own sexuality and sexual identity, and many of the adolescents go through a stage of onset sexual activity. They have risks of early sexual activity and childbearing which can negatively have an effect on their quality of life in the future.

From the study on adolescence in Thailand, the overall mean age of vocational students at their first sexual debut was 16.8 years (± 1.8) from age range 11-20 years (Thato.S et al 2003). Existing data from birth registration records indicated the highest prevalence of pregnancy in Thailand is the adolescents age 15-19 years, and the number is increasing steadily in recent year(UNICEF; situation analysis of adolescent pregnancy in Thailand, 2015, sexually transmitted infections (STIs) and HIV, sexual abuse and other preventable sexual health problems were higher in youths. As a result, policy makers and program planners are facing challenges to promote sexual

and reproductive health and well-being of these youths.(WHO, 2011) Globally, young people age 15-24 of aged experiences the highest rate of sexual transmitted of any age group, and account for 42% of new HIV infection. About 11 million abortions in Asia were unsafe and up to 65% of them are from South-East Asia. Among them, women under age 25 years were 34% along with 11% of 15-19 age group and 23% of 20-24 age group.

2.1.2 Sex

Sex is also considered important to engage in sexual behavior and sexual intercourse including contraceptive use. This is because social expectation on sexual behavior, attitudes, and feelings are linked to gender norms. The sexual double standard supports male as an encouraging factor to involve in pre-marital sexual intercourse which is socially disapproved for women and girls. (Chaweewan Sridawruang, Crozier, & Pfeil, 2010).The results of a cross-sectional study of 386 students and adolescence about premature sexual activity in Thailand provide confirmatory evidence that male was statistically higher in premature sexual activity than female. In that research, the total percentage of adolescents who experienced sexual intercourse was 52.3 % and there were 62.8 % male and proportion of female was 50.5% (Baokumkong C. et al, 2017)

Eastern culture usually recognizes virginity as highly prized and controls females' sexuality. In many Asian societies, women are expected to remain silent with the sex and sexuality issues. It makes it difficult for females to learn about risk reduction and safe sex in their premarital sexual relationships. The strong social stigma and cultural norm of encouraging women to remain virgins until they are married; unmarried women are difficult to access reproductive health services listed as contraception and treatment for sexually transmitted diseases at the health care centers **(http://spl.ids.ac.uk/sexuality-and-social-justice-toolkit/1-issues-and-debates/what-link-between-sexuality-and-gender).**

In the same way, men from male-dominant countries are more sexually active and earlier to involve in a sexual relationship with social norms which encourage virility compared to women. A**s** listed in a study in the USA, it was reported that 64% of male among junior high school students were sexually active and 36 % of female was sexually active.

2.1.3 Religion

In Brazil, a study of an association between religion and attitudes toward the practice of abortion and abortion policy in Brazil indicated that frequently attending Pentecostals demonstrate the strongest opposition to the practice of abortion and both frequently attending Pentecostals and Catholics demonstrate the strongest opposition to its legalization. In addition, religious factors, such as a commitment to biblical

literalism, were also found to be significantly associated with opposition to both abortion issues (Ogland & Verona, 2011).

In Thailand, a study of Buddhism and adolescent alcohol use of 2019 Thai secondary school showed a significant relation between religion and alcohol consumption. That research indicated that students who were classified as practicing Buddhism had less alcohol consumption (28%) than non-practicing students significantly (35%) in the last one year. Buddhists were less likely to drink than non-practicing Buddhists and had fewer positive and more negative expectancies about alcohol. Among students who did drink, Buddhist beliefs did not appear to influence whether or not they were binge drinkers (Newman, Shell, Li, & Innadda, 2006).

This study investigates the influences of a family's spiritual beliefs and practices on substance use and sexual risk behaviors among young adolescents 13 to 14 years old in Bangkok, Thailand. Independent predictor variables are the parents' and teens' spiritual beliefs and practices in Buddhism and parental monitoring behaviors. The study uses data from the 2007 Baseline Survey of the Thai Family Matters Project, which adapted a U.S. based family prevention program for Thai culture. A representative sample of 420 pairs of parents and teens from the Bangkok metropolitan area was recruited to participate in the study. Structural equation models indicate that positive direct and indirect associations of the spirituality of parents and teens within a family and the prevention of adolescent risk behaviors are significant and consistent (Chamratrithirong et al., 2010).

2.1.4 Grade point Average: One of the significant socio-demographic characteristics also takes parts as a prominent determinant on sexual behaviors in developing countries. Results from 26 demographic and health surveys stated that women with more schooling tend to make a later, healthier transition into adulthood by experiencing first sexual intercourse later, marry later, and are more likely to use contraceptive methods compared to less educated peers (Martin T.C, 1995).

Education is protective against a range of health risk behaviors, including higher risk sexual behavior. Increased educational attainment is associated with delayed age at first marriage and first sex for adolescent girls in many settings. Young people who attend school are more likely to delay sexual debut, have better perception of their own risk related to STIs, and are more likely to practice safer sex (Le Lin C et al, 2009,Douthwaite MR et al, 2006,Soonthorndhada 2009).

For example, a study of 1360 adolescents aged between 14 and 19 in Lao PDR demonstrated that school attendance reduced the odds of risky sexual behaviour (including sexual debut less than 15 years, multiple partners, non-use of condoms) for both boys (Odds Ratio (OR) 0.53) and girls (OR 0.17)(Sychsreun V et al,2011) 2012 Afghanistan health survey similarly reported that 12.7% of women with no education, 15.2% with primary education, and 17.8% of women with secondary or higher

education used contraception. Therefore, it pointed out that education is an important factor in using contraception (Osamani.s et al,2012). A study currently showed that more than half of the Thai students who had experienced premature sexual behavior age 15, have their GPA ≤ 2.5 (Buakumkong C. 2017).

2.1.5 Living arrangement

Parents or guardians living together are important for youths' sexual behavior listed as had sexual experience and contraceptive use. Most of the youths staying with their family listed as parents and relatives are found to be less likely to had premarital sex. This is because of the culture transmitted from their parents, and afraid of their guardians' attitude of strictly prohibiting of premarital sexual relationship. A study on adolescents in Malaysia reported that only 5.1% of respondents who lived with parents or relatives had premarital sexual relationship although 12.2% respondents who did not live with their family had a sexual experience (K. L. Lee, Chen, Lee, & Kaur, 2006).

Previous studies in Thailand observed that adolescents and young people Who live with parents and talking about sex and sexual behavior with their parents tend to be less sexually active, and a strong likelihood to use contraception. The 63.7% of adolescents in the study reported that they have discussed about reproductive health with their parents. Nevertheless, adolescents did not feel comfortable and free to ask or they were afraid of the judgmental behavior of the parents. Only 17.5% of the study population felt comfortable in talking with parents. That study also highlighted the transmission of cultural value from parents to their generation. Majority of adolescents (81.3%) reported conservative attitude on premarital sex and adolescents who discussed with their parents, have more conservative attitudes compared to those that have not discussed (Tangmunkongvorakul et al,2010).

2.1.6 Monthly income/pocket money

A study on family planning in Cambodia also reported that higher family income and women's occupation had a significant association with family planning. In Republic of Ireland, a telephone call survey on adults about contraceptive usage reported that oral contraceptive pills (OCP) users had higher income compared to contraceptive non-users (Molloy et al., 2015). Many other intervention studies pointed out the association between income and contraceptive utilization However, one study on Myanmar migrant women in Thailand indicated no significant difference of contraceptive usage upon different income groups.

2.1.2 Knowledge of HIV and Sexually transmitted infections

In 2014, there were an estimated 620,000 young people aged 15-24 years living with HIV in Asia and the Pacific; just over half (53%) were males.210 The number of young people living with HIV has declined since 2005, more so among females (17% reduction) compared with males (14%). The greatest number of adolescents (10-19 years) living with HIV are in India (120,000), Indonesia (46,000), Thailand (11,000), Myanmar (7,700), Pakistan (7,000), Cambodia (3,500), Iran (3,200), Viet Nam (2,600) and Nepal (1,200). In the Pacific, PNG accounts for the greatest number of adolescents living with HIV (1,800). These countries also account for the greatest number of new infections in this age group.

A cross-sectional study was carried out in 2007 in South Delhi, India to investigate the perception, knowledge and attitude of adolescent urban school girls towards sexually transmitted Infections (STIs), HIV/AIDS, safer sex practice and sex education. The majority of respondents (71%) had no knowledge about the effects of Genital Herpes infections, two-fifths did not know the consequences of acquiring Syphilis (43%, and 28%) were unaware that Gonorrhoea was an STI. One-third of the girls (33%) did not consider ulcers in the genital area and pain during urination (31%) as signs and symptoms of STIs in women. In addition, (22%) of the girls did not know vaginal discharge was an important sign of STIs in women. Alternatively, students in the survey reported chest pain (24% and throat pain (9%) as symptoms of STIs in women (McManus & Dhar, 2008)

A study of Kanlantan, Malaysia indicated that all the respondents have heard about HIV/AIDS. However, their knowledge and understanding on how it is transmitted is vague as less than one fifth know that HIV/AIDS can be transmitted through breastfeeding and only 54 percent know that it can be transmitted through blood, drug injection and bodily fluid. Furthermore, 80 percent of respondents believe to be engaged in a relationship in the near future (Badariah Mohd Saad, B.M.,2013)

There was a study among 197 high school students in Northern, Thailand to examine the current state of knowledge and sexual behavior concerning the prevention of Sexually Transmitted Infections (STIs) and to evaluate attitudes toward safe sex and coping with STIs. Including determined the presence or absence of chlamydia and gonorrhea young people aged 15－24 had consciousness of knowledge level of STI prevention, self-efficacy toward safe sex, and coping ability with STIs were significantly higher in females than in males. In the urine test, all of the participants as a sub-set of those surveyed had negative results for STIs. In conclusion, the knowledge level of the participants on STI prevention correlated with self-efficacy toward safe sex and coping ability with STIs (Yamaguchi et al., 2016).

A study of students aged 15 to 21 years revealed that knowledge about modes of transmission of HIV was high. Virtually all of the students had heard about HIV (99.5%), and more than 90% correctly identified all three main routes of infection (sexual intercourse, sharing injection equipment, and mother-to-child transmission). Some students erroneously believed that HIV can be transmitted through mosquito bites or by touching people who have AIDS or that people with AIDS always look sick or show symptoms. There were no significant differences in levels of HIV or STD knowledge between men and women (Bailey et al., 2002).

2.1.3 Knowledge and use of contraception

Early pregnancy (<18 years of age), whether intended or unintended, is associated with poor maternal and perinatal health outcomes. The highest rates of early childbearing occur in South Asia and Oceania where almost one in five and one in ten girls gave birth before 18.years old, A nationally representative study of unmarried women 15-19 in China reported that 17% of sexually active adolescents had experienced a premarital pregnancy and 91% ended in abortion. Other studies also suggest high rates of abortion among adolescents: in Thailand, an estimated 14% of all adolescent pregnancies ended in abortion in 2010 (UNICEF,2015).

The combination of increased adolescent pregnancy and decreasing contraception use in Thailand has caused local experts in numerous fields to take notice. While Thailand demonstrated great success in increasing contraceptive prevalence from 1969 to 2006, progress stalled from 2006 to 2009. Contraceptive prevalence decreased 2.5 percentage points (from 81.1 percent in 2006 to 78.6 percent in 2011) according to the UNFPA (Wassana, 2013). Similarly, adolescent fertility rates among 15 to 19-year-olds in Thailand rose from 39.7 per 1,000 in 1996 to 53.6 in 2011 (UNICEF EAPRO, 2013). It is also important to note that an estimated 129,541 girls between the ages of 15 and 19 became mothers in 2013, and an additional 3,725 girls under the age of 15 became mothers in the same year (Sivarnee, 2013). Adolescent pregnancy has increased to such a level in Thailand. In recent years for every 1,000 live births, 0 are adolescent females (National Statistical Office of Thailand, 2012).

In Thailand, an in-school programme targeting 8-16-year-olds, used group education and interactive activities (listed as games and group work) to explore gender-roles and their link to physical and sexual violence. The programme also focused on building communication and relationship skills. The programme involved eleven sessions of 2.5 hours each, for boys and girls, and demonstrated a significant improvement in attitudes towards gender roles at the completion of the programme.

2.1.4 Knowledge of reproductive health and Attitude of reproductive health

A cross-sectional study to determine the factors associated with attitudes toward premarital sexual activities among school-going adolescents in Kelantan, Malaysia. It was conducted among 1032 secondary school students using a self-administered validated questionnaire. Multiple logistic regression revealed that the risk factors for having permissive attitudes toward practice of premarital sexual activities were male students (odds ratio [OR] = 1.83; 95% confidence interval [CI] = 1.34-2.48), being less religious (OR = 2.02; 95% CI = 1.49-2.73), and younger age group of students (13 to 14 years old; OR = 1.42; 95% CI =1.05-1.92). Having good knowledge on sexual and reproductive health was a protective factor against permissive sexual attitude and young adolescents were at risk of having permissive attitudes toward sexual behaviors, but good knowledge on sexual and reproductive health and being more religious may protect them (Rahman, AA. Et al, 2015).

2.1.5 Drug alcohol and smoking behavior

Alcohol consumption is a serious problem among adolescents in Thailand and is strongly associated with various health-risk behaviors which were affected by social consequences and health.

In Thailand, a cross-sectional survey using a self-administered questionnaire was conducted among 50,033 high school and vocational college students from 201 schools in 40 provinces between December 2007 and February 2008. The result indicated that the prevalence rates of past-year drinking, past-30-day binge drinking, and drinking until intoxication in boys were higher than girls. Higher school levels, lower grades, living with someone other than their own parents, and having family members with substance or alcohol problems were significantly associated with all kinds of drinking. Binge drinkers were significantly more likely to have drinking consequences including sexual intercourse (Assanangkornchai, Mukthong, & Intanont, 2009).

This study investigates risk and protective factors for substance abuse in a sample of 1778 students attending technical colleges in Bangkok and Nakhon-Ratchasima provinces of Thailand using a self-report questionnaire modified from the Communities That Care Youth Survey. Low school commitment was strongly associated with illicit drug use, with adjusted odds ratios ranging from 2.84 (glue sniffing) to 10.06 (ecstasy). Having friends using drugs, and friends with delinquent behaviors increased the risk of using alcohol and illegal drugs, with adjusted odds ratios of 6.84 and 6.72 respectively for marijuana use. For protective factors, approximately 40–60% of students with high levels of moral belief, participation in religious activities, and social skills were less likely to use alcohol. It is concluded that peer influence is a significant contributor to Thai adolescents' participation in substance abuse and that engaging in religiosity may assist adolescents to internalize

negative aspects of harmful drugs into positive perceptions and encourage them to avoid alcohol and illegal drugs (Wongtongkam, Ward, Day, & Winefield, 2014)

A study of a cross-sectional survey of 938 youth aged between 13 and 24 years, sampled from Bangkok and 4 regions of Thailand. The 2011 Youth Risk Behavior Surveillance System questionnaire was used to measure youth risk behaviors. This study finds that 15.9% of respondents had engaged in physical fights, and 8.1% had been cyberbullied. The prevalence of current cigarette smoking, alcohol, and marijuana use were 22.3%, 27.9%, and 2.3%, respectively. The prevalence of risky behaviors among Thai youth was found to be high, including behaviors that contribute to unintentional injuries and violence, unsafe sexual behaviors, and cigarette and alcohol.(Sirirassamee & Sirirassamee, 2015).

2.1.6 Sexual harassment

Globally 30% of **every** partnered adolescent girls aged 15-19 years have experienced physical or sexual violence from a partner, and one in 10 girls have experienced sexual violence. Rates of intimate partner violence are extremely high in the Pacific, with a lifetime prevalence of violence among women 15-49 years around 60-77%.

A study of sexual harassment in the school among teachers parents and students in the northeast, Thailand revealed that sexual violence is violated by touching or fondling or viewing pornographic media. The place of the assault was the home of their boyfriend or other trusted person (Apipalakul, Ngang, & Bouphan, 2015). Another study of sexual harassment in an institution that sexual violence argued that women in Thailand find its root in male-dominated traditions. Sexual violence, including sexual coercion, rape, sexual assault, and sexual harassment, is not just a consequence of modernity or the outcome of a breach in the traditional moral order. Rather, it is a result of well-established gender normative patterns which have perpetuated imbalanced power relations between men and women in Thai society.

2.1.7 Communication skills

As a result of a cultural taboo, adolescents in many developing countries rarely discuss sexual matters explicitly with their parents. Therefore, communication between parent-adolescent about sexual and reproductive health (SRH) communication is one potential source of SRH information for adolescents.

There was a summary report of two surveys carried out on two occasions (November 1996 and October 1997, respectively) on 343 high school students and 246 families who had children 10-24 years of age in a rural town 160 Km south of Addis Ababa. The finding revealed that adolescent's knowledge on aspects of their sexuality was incomplete and not enough to minimize risk-taking. And more than half of them had an opinion that it was unacceptable to discuss growth changes and sexual issues with parents during adolescence. Females had more negative attitude about sex

issues. Parents had a partial knowledge regarding adolescent sexual maturation and behavior or complication of teenage pregnancy. More than 90% of parent did not approve premarital sex and ironically, around 20% of them reported discussion of growth changes(Taffa, Haimanot, Desalegn, Tesfaye, & Mohammed2, 1999).

A study cross-sectional study was done on 4,559 adolescents of age 13–18 in Harar, Ethiopia in a community based which appeared to be an inadequate practice. The results presented that the adolescents who were more likely to practice poor-very poor in SRH communication were those who had poor behavioral beliefs and poor subjective norms of communicating sexual issues with parents and those who perceived their parents' reproductive health (RH) knowledge as poor (Dessie, Berhane, & Worku, 2015)

2.2 Perceptions

2.2.1 Perceived susceptibility

Adolescent females are at significant risk for sexually transmitted infections (STI) and may not accurately incorporate indicators of risk into their perceptions of susceptibility.

In the USA, a study of 209 sexually active adolescent females taking part in a larger prospective study on HIV/STI risk behavior among pregnant and sexually active teenagers. Participants were recruited through 10 hospital clinics, community healthcare centers, and high school-based clinics in New Haven, Bridgeport, and Hartford, Connecticut which had the highest rates of teenage pregnancy, HIV/AIDS, and STIs. The result found out that adolescent women were at high risk for STI. More than half of the participants had a past STI. Most participants (88.9%) perceived little or no risk for STI and only 11.2% perceived a higher risk of getting an STI. There was no significant relationships between perceived susceptibility and the experience of recent symptoms, unprotected sex or higher numbers of sexual partners. There was a significant relation between STI history and perceived susceptibility; however, this study indicated that the adolescent females in this sample did not accurately perceive their susceptibility to STI (Ethier, Kershaw, Niccolai, Lewis, & Ickovics, 2003).

In South Africa, a cross-sectional study of 408 students of 206 females and 202 males residing within the university campus of The University of Venda. The result found out that the majority of the students showed high perception regarding their susceptibility to the negative outcomes associated with unprotected sex, especially when they consume alcohol while engaging in sexual activities and when having multiple sexual partnerships. Contrastingly, the students demonstrated low perception regarding susceptibility to HIV transmission through the practice of oral sex (Anyanwu et al., 2013).

In 2003, a study of Ghana Demographic and Health Surveys (GDHS) of 5691 participants to examine factors that influence condom use among women in Ghana in

the context of HIV/AIDS infection and prevention. The outcome variable for this study is condom use during last sexual intercourse. The perception of HIV/AIDS risks, awareness of its seriousness, knowledge about prevention, and confidence in condom use as predictors of safe sexual activity. Results presented that the proportion of women reporting use of condoms remains tremendously low, in both the rural and urban areas. In the urban areas, only 15% of women reported having sex with condom during their last intercourse, whereas in the rural areas the proportion is even lower (10%) (Baiden & Rajulton, 2011).

2.2.2. Perceived severity

The participant's comprehension on the seriousness of diseases that causes negative health condition listed as HIV and Sexual Transmitted Diseases. The college environment offers a great opportunity for HIV high-risk behaviors, including unsafe sex and multiple partnerships. There is a study of commuter urban university in the Midwest revealed that 390 students, the perception of HIV risk were generally poor with 54% of those age 30 years and older, 48.1% between 20-29 year olds, and 57.9% of those below the age of 20 years perceived themselves as not having any chance of being infected with HIV. Predictors of moderate/good perception of HIV risk were drug and alcohol use, inconsistent condom use, and multiple partnerships. It can be concluded that students in the study sample engaged in various HIV risk behaviors but have a poor appreciation of their risk of HIV infection (Adefuye, Abiona, Balogun, & Lukobo-Durrell, 2009).

There was a study of the perceptions of severity and risk of acquiring sexually transmitted diseases among Thai female adolescents with and without sexual experiences in southern Thailand. The study revealed an association with sexual behaviors, and perceptions of severity and risk of acquiring sexually transmitted diseases in students who had sexual experience and had higher average scores of severity perception and risk for contracting sexually transmitted diseases than those without sexual experience ($p < .05$) (Konggumnerd, Sindhu, & Tongkong, 2012b).

2.2.3 Perceived benefits

A participant's understanding of the effectiveness of various actions available to reduce and prevent the threat of HIV and STIs including unintended pregnancy by using condom or contraceptive.

A cross-sectional correlational design was used with a cluster-based sample of 425 students aged 18 to 22 years from eight randomly selected private vocational schools in Bangkok. Overall, 49.9% of participants were sexually active, 64.8% of men and 32% of women. Of the sexually active participants, only 6.3% reported using condoms every time when having sex in the beginning of the relationship, and 10.2% during the last few times. Twenty-four percent of sexually active participants had unplanned pregnancies, and 7% had sexually transmitted diseases (STDs). The

predictive model of condom use consisted of perceived benefits from using condoms; interactions between intention to use condoms and gender: knowledge of STDs, HIV, AIDS, pregnancyand peer norms; and alcohol use and age. Adjusting for modifying factors, the predictor set explained 27% of the variance in condom use (Thato,S. et al,2003).

2.2.4 Perceived barriers

Data were extracted through MEDLINE from papers published between 1993 and 2007. Surveys, reviews, clinical studies and comments were included in this review. The impact of cost, moral, social, personal and psychological factors were taken into consideration. Result found that several factors were associated with non-use of a condom during sexual intercourse. Their cost often posed a barrier to condom use for the poor, even in developed countries. In many communities, moral values, ethnic and religious factors also played a role. Among other social factors, gender inequality, lack of a dialogue among partners with regards to condom use, including the stigma attached to the condom could all lead to unprotected sexual intercourse. Personal factors such as aversion to the condom, consumption of alcohol or use of drugs prior to sexual intercourse, and anxiety and depression all were negatively associated with condom use. (Sarkar, N.N., 2008) In a cross-sectional survey in rural area of Benin, South Africa,the overall condom use in this population was low (34%). We identified several socio-cultural barriers to behavioral change namely reported problems using condom (Hounton,S et al, 2005).

A study in Romania revealed that female youths who came to RH medical clinic generally felt fear at their first time. Most of the unmarried but sexually active female addressed that those services made them a public statement. Moreover, some medical staffs made a judgmental attitude that made youths discomfort. The next barrier was was being treated disrespectfully from doctors even if they did not have judgmental attitude, such as being in a hurry, not being empathetic and not giving them time to open up and talk. The main barriers that female youths identified were psychological such as fear, and other barriers were the quality of the services available and the doctor-patient relationship. Due to these barriers, youths had limited access to information, communication, and service. Hence, that study recommended that service providers' attitudes and mentalities should change to overcome these barriers in providing and promoting appropriate information and service to youths (Teodoru and Bancila, 2002).

2.3 Self- efficacy

A study in Texas USA, of Texas middle school grade seven and eight for explaining adolescents' sexual abstinence and intentions to remain abstinent and refine the framework to reflect which elements contribute more powerfully to the explanation of abstinence and intentions. The result revealed that pro-abstinence standards predicted stronger beliefs toward staying abstinent, strong perception and a

greater self-efficacy to remain sexually abstinent until marriage. In turn, beliefs, norms, and self-efficacy were predictive of intentions, which predicted sexual abstinence at a later time point (Buhi, Goodson et al. 2011).

In Thailand, a study of sexual behavior among 92 HIV-infected Thai youth age between 14 to 21 years in Chiangmai province, north of Thailand. The study presented conflicting results due to the different ages of the respondents. There were low levels of sexual activity with 13 respondents having sex in the last 6 months. The sexual self-efficacy scales were inversely related to the risk behaviors of having sex, having multiple partners, and drinking alcohol in the last 6 months. The scores of the sexual self-efficacy scale and its subscales were significantly lower in those aged 17 to 21 than in 14 to 16. Sexual risk behaviors were significantly higher in those aged 17 to 21 than in 14 to 16. These findings suggest that interventions to increase sexual self-efficacy should be emphasized as HIV-infected Thai youth reach late adolescence (Viseskul, Fongkaew, Settheekul, & Grimes, 2015).

A study of knowledge and sexual behavior concerning the prevention of Sexually Transmitted Infections(STIs), and to evaluate attitudes toward safe sex and coping with STIs among 197 high school students age 15-24 years in Northern, Thailand. STIs. In conclusion, the knowledge level of the participants on STI prevention correlated with self-efficacy toward safe sex and coping ability with STIs (Yamaguchi et al., 2016).

A study of knowledge and sexual behavior concerning the prevention of sexually transmitted infections (STIs), and attitudes toward safe sex and coping with STIs among 197 high school students in Northern, Thailand. Including urine test for chlamydia and gonorrhea infections of 70 students. The result presented that students were actively concerned with emotional relationship and homosexuality, but had negative attitudes toward sexual behavior including premarital sex and kiss. Females had higher self- efficacy safe sex than males, including consciousness of knowledge level of STI prevention, and coping ability with STIs. In the urine test, all of the participants as a sub-set of those surveyed had negative results for STIs (Yamaguchi et al., 2016).

2.4 Cues to action

This is the stimulus needed to trigger the decision-making process to accept a recommended health action. These cues can be internal (e.g., chest pains, wheezing, etc.) or external (e.g., advice from others, illness of family member, newspaper article, etc.).

-Internet, today's young people are growing up in a rapidly changing society. Urbanization, globalization and increasing access to media exposes young people to a great diversity of ideas, attitudes and norms. As a result young people's attitudes towards sexual activity are changing, with studies in Malaysia, Philippines, Indonesia,

China and Iran revealing a more permissive attitude towards dating and premarital sex than their adult counterparts. Pornography consumption was significantly associated with premarital sexual activity among young men, but not women. These findings are comparable with international counterpart studies, and lend support to additional studies that have demonstrated the steady liberalization of youth sexuality in Indonesia over the past decade.119 A study of 1500 university students in Iran reported that 88% of girls and 84% of boys had viewed pornographic material in the last six months, although there was no statistically significant association between exposure to pornography and sexual activity. While concern about young people's exposure to pornography is common, currently global research linking pornography to higher risk sexual behavior is inconclusive and the long-term impacts require further investigation.

Teenagers are mostly revealed to sexual content in magazines, on television, in movies. Majority sexual behavior on television happens among premarital adults and neglects the potentially negative effects of intercourse, music movies often merged sex and violence (Huston, Wartella, & Donnerstein, 1998). However, the consequence of media exposure on teenagers' sexual behavior and attitudes has not been adequately analyzed. Experimental researchers indicate that exposure to sexual material can conduct to more indulgent behaviors about unmarried sexual intercourse, but a relation among exposure and teenager intercourse has not been released (Huston et al., 1998). Especially media influence, males' pornography consumption was importantly more often attended by solitary sexual behavior than females'. Importantly, more females 34.9 percent than males 7.8 percent documented to have made sexual behavior with a spouse during consumption of pornography. For both sexes, pornography had most often taken from the house by DVD/VCD or mobile phone through the internet and accessed in solitary (Barton et al., 2016).

This study investigated the role that media message processing variables stemming from the Message Interpretation Process (MIP) model play in adolescents' intentions to engage in sexual activity. Data collected from 873 adolescents in the United States were examined in an ordered logistic regression model containing demographic variables; attitudes; self-efficacy; parent and peer normative beliefs; and media message processing variables. The analyses revealed that media message processing variables have a unique influence on adolescent sexual intentions above and beyond the influence of all the other predictors. Specifically, higher levels of perceived realism of, perceived similarity to, and identification with media messages were related to higher levels of adolescent sexual intent. These findings support the relevance of logical processing of media messages for adolescent intentions for sexual activity and suggest that this may be a possible cognitive mechanism to address in media literacy education programs focusing on promoting healthy decision-making (Scull, Malik, & Kupersmidt, 2017).

In 2008, we conducted online interviews with 65 self-identified adult heterosexual men and women and gay/bisexual men to explore perceptions and experiences with meeting people online. Reasons for meeting people online, desired partner characteristics, and the process of connecting for sex paralleled those observed in real-life; but the Internet allowed people to identify more partners and specific partner characteristics. “Background checks” of online partners, even though often believed to be false, increased familiarity and trust leading to reduced perceived need for condom use. Participants said online condom use negotiation was easier, but usually occurred in face-to-face contexts in practice (Seal et al., 2015).

-Health education: use of the Internet has had a significant impact on sex-related knowledge and behavior. A study of Chinese and Vietnamese youth, for example, found that over half had learned about sex from the Internet. For a number of youths, the Internet is also a platform by which to express their sexual identity and desires. In Vietnam, the Internet is being widely used as a space to learn about sexual relationships from the personal experience of others, particularly when SRH information is not available from other sources.

This study explores the impact of a peer-led HIV intervention, based on the health belief model and social cognitive theory of behavior change, on a sample of African American college students. Certified peer educators were trained by the researcher to implement the four-module HIV prevention intervention. Pre/post assessments revealed that after the intervention, students were less embarrassed to put a condom on themselves or on their partner, were more likely to use a condom, and ask their sex partner if they had ever been tested for HIV. It was concluded that peer education, which focuses on susceptibility, severity, benefits, self-efficacy (components of the health belief model), skill building, and peer influence (social cognitive theory) is an effective strategy in reducing HIV risk behaviors among African American college students(Calloway, Long-White, & Corbin, 2014).

A study of youth in Thailand 2,194 male individuals aged 15–24 years showed that education played a significant role in risk perception of STIs. Risk perception was increasing with the increasing level of education. Other conducive and facilitating factors, such as household wealth, living in urban or semi-urban areas, and access to mass media such as television, also had a positive influence on risk perception. The odds ratio showed that condom-users who had indulgence in liquor were less likely to perceive the risk of STIs. Overall, socioeconomic status had a great influence on risk perception of STIs. Finally, youths exhibiting high-risk sexual behavior need realistic risk assessments and positive ways of incorporating condom into their sexual lives (Haque & Soonthorndhada, 2009).

Symptoms of STIs; to determine the awareness and knowledge of sexually transmitted infections among adolescents in Ado, South Western Nigeria. Eighty

percent of the respondents knew only one STI and the two most commonly mentioned ones were HIV/AIDS (78.0%) and gonorrhea (23.0%). More than 75% of the respondents knew the modes of transmission of STIs while some of them equally had misconceptions. The most important symptoms mentioned were weight loss (77.4%), painful micturition (68.9%), and genital ulcer (54.1%). On the whole, only 6.9% of the respondents had good knowledge of STIs; the rest had fair and poor knowledge. Secondary school adolescents in Ado Local Government Area have only a fair knowledge of sexually transmitted diseases (Amu & Adegun, 2015).

Peer influence for adolescent's sex behavior: there was a study of student sixth-grade school year 63% reported not having initiated sexual intercourse by the end of the sixth-grade school year. Students in the initiated group were more likely than students in the never group to perceive: The strongest predictor of high intention is believed that most friends have already had sexual intercourse. Perceptions of social gain and stigma for sexually-experienced 12-year-old boys act independently of intention to decrease the risk of early sexual initiation. Sexual intercourse is not an unplanned experience for many teens. Decisions about initiation are strongly bound to social context with peers (Kinsman, Romer, Romer, & Schwarz, 1998).

The study was conducted to assess the magnitude and associated factors of pre-marital sexual debut. The result showed that a significant proportion of unmarried high school female students have started pre-marital sexual debut. The finding suggests the need for communicating and supporting school students to help them make informed and safer decisions on their sexual behavior (Mulugeta & Berhane, 2014).

This longitudinal project examined peer influence across five risk behaviors: cigarette smoking, alcohol consumption, marijuana use, tobacco chewing, and sexual debut. A total of 1,969 adolescents aged 12–18 years completed two waves of data collection. Each respondent matched behavior data for at least one friend. Results found that a random same-sex peer predicts a teen's risk behavior initiation; there is influence only to initiate cigarette and marijuana use; and that there is an influence to initiate and stop alcohol and chewing tobacco use. This finding suggests that friends may protect adolescents from risk activities. The study has implications for understanding how peer influence, expressed as social norms, may be used in public health campaigns that target teen behavior.(Maxwell, 2002)

Family is also important according to a survey of 1,725 vocational students age 15-21 years in northern, Thailand to assess social and demographic characteristics, substance use, sexual behavior, and knowledge of HIV and STIs. Males initiated sexual intercourse at an earlier age at 17 and female at age 18. They also found that both male and female who sexual initiated were living away from family and single parents. The study findings suggest that race, gender, and

communication with parents are important factors within the sexual activity of college students(Lehr, DiIorio, Dudley, & Lipana, 2000).

In a study of attitudes of Thai parents and adolescents age 15-19 years in Udon Thani, Thailand towards premarital sex. The result revealed that there were double standards for young men and young women that are concerned about the social norm for premarital sex. The social judgment of girls, but for boys have nothing to lose. The influence of traditional values is still very strong in rural north-eastern Thailand. The findings highlight adolescences' need for more support from their parents. The promotion of open, honest communication between parents and their children is important to overcome the difficulties of social judgments and align thinking between old and new social values (Chaweewan Sridawruang et al., 2010).

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2.5 Adolescent safe sex behaviors

In the cohort study in Spain, the objective was to examine sexual behavior, levels of knowledge, and attitudes toward HIV/AIDS between two cohorts in Spanish adolescents, and to analyze gender differences in these cohorts. Participants were 2132 adolescents between 15 and 18 years of age: 1222 in 2006 (43.2% boys) and 910 in 2012 (54.1% boys). The results indicate lower HIV knowledge and less favorable attitudes about HIV/AIDS in the 2012 cohort. In addition, adolescents from the 2012 cohort had their first sexual intercourse at an earlier age and have more sexual partners than those from the 2006 cohort. Compared to boys, girls engage in fewer risky behaviors, although they did not use condoms with their stable partner; girls tend to use condom less when they were in a stable relationship than boys. This study confirms the insufficiency of prevention campaigns as well as the need to improve the impact from programs that promote healthy sexual habits. Assuming comparability of cohorts, this study suggests increased risk of HIV/ AIDS over time (Espad, José P., 2015).

A study of adolescent behavior in the northeastern part of Thailand found that adolescent sexual behavior were ranked from low risk to high risk of sexual health. Low risk included having a steady boy/girlfriend, hugging, and kissing. Highrisk sexual behavior featured unprotected sex, abuse or rape, and abortion. Important influences were: eagerness to learn and try to have sex, men' sexual desire, peer group value of having sex, and material value. Sexual protective behavior was up to males, whether they were willing to use a condom with female having little power to negotiate (Saranrittichai & Sritanyarat, 2006).

This study of Thai vocational student to examine the relationships among attitudes toward condom use, personal characteristics, condom use self-efficacy, and actual condom use among Thai adolescents. Predictors of condom use were also investigated. The results found that self-reported history of alcohol/drug use, attitudes

toward condom use, and condom use self-efficacy were related to actual condom use. Results that emerged from the open-ended questions suggested sexual double standards among Thais (Khumsaen & Gary, 2009).

2.5.1 Abstinence

There was a study in Cambodia, of 300 youths to describe sexual and reproductive health characteristics and risky behaviors in two rural provinces of Cambodia. The result revealed that a majority (90%) stated that a boy or girl should defer sex till marriage. More than 90% of youth also reported that they may or definitely will seek sexual and reproductive health services in the future. Approximately around 5.4% of youth had a prior sexual experience(Lopez, Mukaire, & Mataya, 2015).

A study of students grade seven 451 and grade eight 447 for testing an integrative theoretical framework in explaining adolescents' sexual abstinence and intentions to remain abstinent and refine the framework to reflect which elements contribute more powerfully to the explanation of abstinence and intentions. Pro-abstinence standards predicted stronger beliefs toward staying abstinent, stronger perceptions that others endorse pro-abstinence norms, and a greater self-efficacy to remain sexually abstinent until marriage(Buhi, Goodson, Neilands, & Blunt, 2011).

In Thailand, adolescents are now engaging in sexual activity in their early years, sexual behavior needs to be explored to prevent contact of sexually transmitted diseases (STD), including HPV and cervical cancer. This study was conducted to explore adolescents' viewpoints of individuals aged 13-19 years living in rural families in Khon Kaen province. The preliminary findings indicated that factors contributing to low sexual risk behavior were helping family to do housework, an emphasis on learning, listening to parents, and following their advice (Saranrittichai & Sritanyarat, 2006).

2.5.2 Condom use

Condom use has been identified as the primary method of STD and HIV prevention for sexually active individuals, yet less than half of college students report using condoms consistently (American College Health Association,2002).

Within HIV-endemic settings, few studies have examined gendered associations between sexual self-efficacy (SSE), one's confidence or perceived control over sexual behavior, and uptake of HIV prevention behaviors. Using cross-sectional survey data from 417 sexually-experienced adolescents (aged 14–19, median age = 18, 60% female) in Soweto, South Africa, we measured SSE using a 6-item scale (range:0–6) with 'high-SSE' = score > 3 (study alpha = 0.75). Gender-stratified logistic regression models assessed associations between high-SSE and lifetime consistent condom use. A higher proportion of women reported high-SSE (68.7%) than men (49.5%, p <

0.001). We observed no difference in reported consistent condom use by gender (45.5% among women, 45.8% among men; p = 0.943). In confounder models, high-SSE was associated with consistent condom use among men (aOR = 3.51, 95%CI = 1.86–6.64), but not women (aOR = 1.43, 95%CI = 0.74–2.77). Findings highlight that individual-level psychosocial factors are insufficient for understanding condom use and must be considered alongside the relational (Closson et al., 2017).

Data for this study are from the 2003 Ghana Demographic and Health Surveys (GDHS) and the study population (*N*=5 691) was analyzed using logistic regression with the Health Belief Model (HBM) as an explanatory tool. The outcome variable for this study is condom use during last sexual intercourse (Baiden P,etal, 2012).

A study of youth in Thailand 2,194 male individuals aged 15–24 years presented that condom used among youths aged less than 15 years was around 6%. A large proportion (78.5%) of the youths aged 15–19 years had used condoms for the first time. The minimum age of the first use of condom was 12 years. Youths, aged 15–24 years, is a large proportion of the total population in Thailand, and unsafe sexual behaviors are increasing. A greater proportion of unmarried youths was engaged in sexual activity before the age of 20 years and that condom-use was also inconsistent. Education played a significant role in risk perception of STIs. Risk perception was increasing with the increasing level of education. Other conducive and facilitating factors, such as household wealth, living in urban or semi-urban areas, and access to mass media such as television, also had a positive influence on risk perception. The odds ratio showed that condom-users who had indulgence in liquor were less likely to perceive the risk of STIs. Overall, socioeconomic status had a great influence on risk perception of STIs. Finally, youths exhibiting high-risk sexual behavior need realistic risk assessments and positive ways of incorporating condom into their sexual lives (Haque & Soonthorndhada, 2009).

A study of premarital sexual behavior without using condom among adolescents is a major health concern all over the world. Although condom has been made available more than a hundred years, condom use remains inconsistently. This study aimed to investigate the relationships among attitudes toward condom use, personal characteristics, condom use self-efficacy, and actual usage of condoms among Thai adolescents. Also, the predictors of condom use were examined. The model for this study was based on Bandura's conceptualization of self-efficacy for the prevention of HIV/AIDS/STDs. A cross-sectional descriptive correlational design was employed on a cluster based sample (n=270) of male and female Thai vocational school subjects (18-21 years of age) in Ubon Ratchathani province, Thailand., 180 participants (66.66%) have been sexually active. Among them, the mean age at first sexual intercourse was 16.88 years (SD=1.93). The youngest age at sexual initiation

was 11 years of age (3%). At the beginning of a sexual relationship, 13.3% reported condom use every time. At the last few times of a sexual relationship, 16.7% reported condom use every time. Furthermore, only 16.7% of subjects reported that in general, they used condoms at the times of sexual activity. The main reasons for using condoms were to prevent pregnancy (30%), and to prevent AIDS (30.4%). The main reasons for not using condoms included: 'not natural' (10.4%), and used other methods (5.6%). Significant correlations were identified among the self-reported history of alcohol/drug use, attitudes toward condom use, and condom use self-efficacy on actual usage of condoms. Eleven percent (R2=11.3%) was the variance in actual usage of condoms explained by gender, age, self-reported history of alcohol/drug use, duration of the current intimate relationship, and perceived preventive behavioral peer norms, knowledge of STDs/HIV/AIDS and pregnancy, attitudes toward condom use, and condom use self-efficacy. The empirical knowledge obtained from this study provide a rationale for nursing practice to conduct nursing interventions to achieve a change in condom use behavior among Thai adolescents. Moreover, this study makes contributions to health policy, nursing research, and community-based studies (Khumsaen & Gary, 2009).

The National AIDS Committee of Thailand reported that condom use at last sex among female sex worker (FSW), male sex worker (MSW) and men have sex with men (MSM), Transgender(TG) remains at a high level. While uptake of prevention and HIV test and counselling services has increased slowly, service coverage has not reached optimal levels and not be able to meet the national target (Committee & MoPH, 2015).

2.5.3. Contraceptive use

Contraceptive services where contraceptive information provides for adolescents should be ensured that services are accessible, acceptable, appropriate, equitable and effective for adolescents and youths. Besides, health providers have to be trained to offer youth-friendly services for youths in providing contraceptive and reproductive health information with full confidentiality and privacy (Youth Contraceptive Use, 2017).

A study of United State of America was conducted between October 2011 and February 2012, homeless youth (14-27 years old) from 2 drop-in centers in Los Angeles (N= 380) were recruited and completed a questionnaire. The data were restricted to those who reported vaginal sex at last sex (N= 283). The result revealed that twenty-seven percent of the youth reported not using any contraceptive at last vaginal sex, 15.3% used withdrawal, and 48.4% used an effective contraceptive method. However, there are no significant differences between males and females in their reports of contraceptive method use at last vaginal sex, nor any gender

differences in past month contraceptive service utilization(Winetrobe, Rhoades, Barman-Adhikari, Cederbaum, & E. Rice PhD 1, 2013).

A cross-sectional study in China of adolescent sex workers of 493 girls age 15-19 years, showed that twenty–seven percent of adolescent sex worker had never used any of modern contraception. Condoms (69%) and oral contraceptives (38%) were most commonly reported, less than 3% had ever used on an intrauterine device. There is also low rate of dual protection (34%). About half of the respondents reported one or more lifetime abortion. Inconsistent of condom use, alcohol consumption was associated with prior abortion (Zhang, X .D.et al, 2014).

There was a study of the perceptions of severity and risk of acquiring sexually transmitted
diseases among Thai female adolescents 442 vocational students from Southern Thailand with and without sexual experiences. Finding that association with sexual behaviors, and perceptions of severity and risk of acquiring sexually transmitted diseases in students who had sexual experience had higher average scores of severity perception and risk for contracting sexually transmitted diseases than those without sexual experience ($p < .05$) (Konggumnerd et al., 2012b).

2.6 Health Belief Model

The Health Belief Model is by far using to motivating people to take positive health actions that uses the desire to avoid a negative health consequence as the prime motivation. The HBM derives from psychological and behavioral theory with the foundation that the two components of health-related behavior are 1) the desire to avoid illness, or conversely get well if already ill 2) the belief that a specific health action will prevent, or cure, illness. Ultimately, an individual's course of action often depends on the person's perceptions of the benefits and barriers related to health behavior. There are six constructs of the HBM. The first four constructs were developed as the original tenets of the HBM. The last two were added as research about the HBM evolved.

1. Perceived susceptibility is the opinion of the probability of developing a condition and perceived severity is beliefs upon the significance of illness or condition listed as pain, disability, social costs were identified as perceived severity (Glanz & Bishop, 2010). A study in Saudi Arabia on cardiovascular disease and annual physical activity found that participants rarely perceived their own behavior to be harmful but their doctors had identified various risk factors listed as high fat intake, obesity and low level of physical activity as the major potential cause of diseases for them (Khattab & Aboltotouch, 1999).
2. Perceived severity -A person's feelings on the seriousness of contracting an illness or disease. There is wide variation in a person's feelings of severity, and often a person considers the medical consequences (e.g., death, disability) and

social consequences (e.g., family life, social relationships) when evaluating the severity.

3. Perceived benefits -A person's perception of the effectiveness of various actions available to reduce the threat of illness or disease (or to cure illness or disease). The course of action a person takes in preventing (or curing) illness or disease relies on consideration and evaluation of both perceived susceptibility and perceived benefit, such that the person would accept the recommended health action if it was perceived as beneficial. An interventional research that was conducted among female university students in Saudi Arabia mentioned that improved physical activity can decrease the negative symptoms of insomnia and also depression, and improve the ability of concentration on a particular task without distraction (Al-Eisa, E., Buragadda, S., & Melam, G. R., 2014).
4. Perceived barriers - A person's feelings on the obstacles to performing a recommended health action. There is a wide variation in a person's feelings of barriers, or impediments, which lead to a cost/benefit analysis. The person weighs the effectiveness of the actions against the perceptions that it may be expensive, dangerous (e.g., side effects), unpleasant (e.g., painful), time-consuming, or inconvenient. Like perceived benefits, most of the perceived barriers are also based on one's beliefs upon the tangible and psychological cost of the specified behavior or action. It was examined as the strongest predictor for health behavior change (as cited in Gristwood, 2011, p.64). This is because perceived barriers can prevent the initiation of a new activity or habit and decrease commitment to an existing pattern of activity (Tumusiime, 2004).

   A cross-sectional study was performed to find the prevalence of the barriers for Colombian college students (n=5663) engaging in physical activity in 2013. This study found out that the most prevalent barriers to perform the physical activity for overweight individuals were fear of injury (87.0%), lack of skill (79.8%), and also, lack of resources (64.3%). The group of females revealed that the barriers to participate in physical activity are social influence, lack of time and energy, lack of willpower, and again, lack of skill and resources. Such observation also appeared in the 20-23 year old age group and in those aged over 23yearsold regarding lack of energy (Ramírez-Vélez, R., et al 2015).

5. Cue to action - This is the stimulus needed to trigger the decision-making process to accept

   recommended health action. These cues can be internal (e.g., chest pains, wheezing, etc.) or external (e.g., advice from others, illness of family member, newspaper article, etc.). A qualitative study among Belgian university students indicated that not only physical but also sedentary activities were influenced by individual factors listed as perceived enjoyment, self-discipline, time and place convenience, their social networks, lack of parental control and social support to do physical activity, barriers in physical environment listed as availability and

accessibility to reach to the place for doing physical activity listed as time taken, price, and distance. Furthermore, macro environment listed as media and advertising were also important factors which can influence individual physical activity practice. In addition, the relationships between university students' physical activity and sedentary behavior seemed to be influenced by university characteristics, for examples, residency, university lifestyle, academic exams and pressure. Effective recommendations for future physical activity interventions was involved in that study and they are improving information strategies including on-campus sports activities, cheaper more flexible sports facilities, subscriptions and formulas, inserting 'sports time' schedule into the university curricula, and providing university bicycles around the university campus and nearby places. Those students who participated in that research also believed that increasing students' physical activity will reduce their sedentary behavior at the same time (Deliens, T., et al 2015)

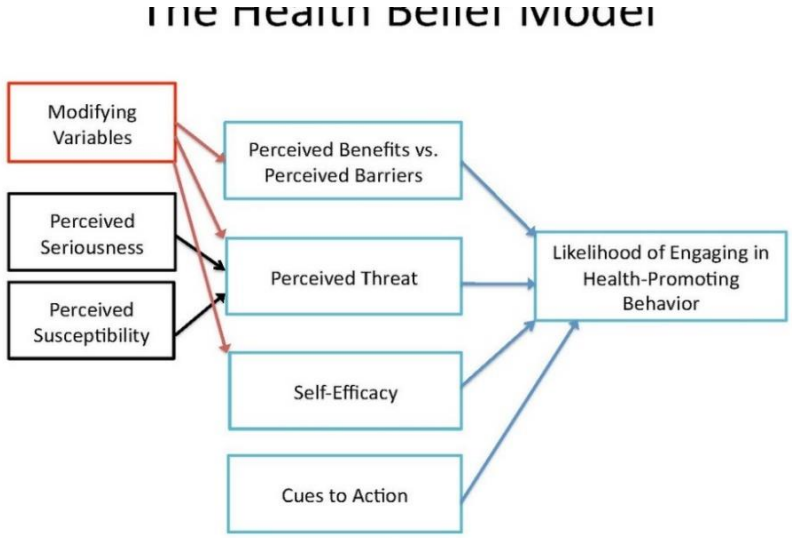
6. Self-efficacy – This the level of a person's confidence in his or her ability to successfully perform a behavior. This construct was added to the mode

l most recently in mid-1980. Self-efficacy is a construct in many behavioral theories as it directly relates to whether a person performs the desired behavior.A strong sense of self-efficacy can initiate physical activity by overcoming physical barriers and to sustain the condition or habit over time (Glanz et al, 2002). Age, gender, current mental and physical health can again influence to self-efficacy to do required intervention listed as physical activity (Martin et al, 2010). It's important to note that avoiding a negative health consequence is a key element of the HBM. For example, a person might increase exercise to look good and feel better. That listed as does not fit the model because the person is not motivated by a negative health outcome — even though the health action of getting more exercise is the same as for the person who wants to avoid a heart attack.

2.7 Brief about Thailand and Nakhon Ratchasima Province

World Bank mentioned that Thailand has made significant progress over the last for decades in social and economic development, upgrading from a low-income country to an upper-income country in less than a generation. Therefore, Thailand has been one of the widely cited development success stories, with sustained strong growth and impressive poverty reduction, particularly in the 1980s. Thailand's economy grew at an average annual rate of 7.5% in the boom years of 1960 to 1996 and 5% following the Asian financial crisis during 1999-2005, creating millions of jobs that helped pull millions of people out of poverty. Gains along multiple

Figure 2 Health believe model



dimensions of welfare have been impressive: more children are now getting more years of education, and virtually everyone is now covered by health insurance while other forms of social security have expanded. After average growth slowed to 3.5% over 2005-2015, with a dip to 2.3 % in 2014-2016, Thailand is now on the path to recovery. Growth is projected to reach 3.5% in 2017 and expand further to 3.6% in 2018(World Bank, 2018).

Nakhon Ratchasima, generally known as "Khorat", is Thailand's largest province situated on sprawling northeast plateau. Located approximately 260 kilometers northeast of Bangkok, the city itself serves as the gateway to the lower northeastern region. Covering an area of 25,494 square kilometers that is mainly plateaus and mountainous terrain, Khorat has fascinating traditions, charming hospitality, splendid natural scenery and awesome historical sites. Population is 2,525975 for female 1,281062 and male 1,244,928 (National Statistical office 2017)

For administrative is divided into 32 district. The districts are further subdivided into 263 sub-district and 3743 villages. We also divide in the geographical area as urban , suburban and rural . (Office of the Royal Society of Thailand 2010). Urban area is Mueang Nakhonratchasima district, where the provincial administrative offices are located. Sub-urban area where the people living outside of urban area within commuting distance to come and work in Mueang Nakhonratchasima District. There are 7 district located in suburban area listed as; Sung Noen, Kham Thalay so , Pakthongchai, Chokchai, Non Sung , Non Thai, Chalermprakiat district. And Rural area is a geographic area that is located outside cities or municipality, 24 districts are located in rural area and most of the population are farmer with low population density and small settlement.

Nakhon Ratchasima can be categorized as the most prosperous province in the northeast region and has long been the most important political and economic centre in the northeastern region. Thai Government has laid out the long term economic goals in its 20 years National Strategies (2017-2036). These projects include the implementation of large multi-year public infrastructure projects related to dual tracking of railways from Bangkok to Khorat.

Vocational school in Thailand

Thailand is currently in shortage of a large number of skilled workers. In 2015, when the ASEAN Community is in place, it may face a growing shortage of skilled workers. Technical and vocational education is another opportunity for student who complete year 9 in junior high school. Students undertake a three-year Vocational Education Certificate (Por Wor Chor), which is equivalent to grade 12 in academic stream. For further study , vocational students can choose to follow this with two- year Vocational Education Diploma (Por Wor So)(Hawley, 2003). Furthermore, the provision of vocational study has extended to bachelor degree in some area such as engineering and computer sciences

There are 416 institutions in five regions with more than 1.3 million vocational students all over the country(Office of the vocational Education Commission, 2018). There are various of program for students to study listed as;

1. Vocational certificate, the duration is 3 years which is equivalence to grade 12 of academic stream. A curriculum provided for those who graduate from an secondary school (Grade 9) . This curriculum aims to produce and develop skills of manpower.

2. Diploma Certificate, this curriculum provided for those who graduate from vocational certificate level or high school. This curriculum aims to produce and develop the professional skills of manpower.

3. Higher Diploma in Technical Education equivalent to Bachelor's Degree for those who finish the diploma in vocational education. This aims to produce professional teacher.

4. *Bachelor's degree* in Technology or Operation - a curriculum designed for those who finish the diploma in vocational education and continue the study further for 2 years.

5. Career development and special training – a curriculum provided to learners of all education levels. The course take 6-225 hours while the 108 Careers curriculum takes 1-4 hours, open occasionally. There are 10 programs compose with more than 350 subject areas curriculum listed as 1) Industry , 2) Commerce/Business Administration, 3) Tourism and Hospitality ,4)Arts, 5) Textile ,6) Home Economics, 7) Information and 8) Communication Technology 9) Agriculture, 10) Fishery

Compared with academic stream students vocational students are from low socioeconomic backgrounds and are more likely to participated alcohol consumption and smoking and substance abuse and fighting and sexual assault and motorcycle gang which leading to motorcycle and vehicle accident. (Assanangkornchai et al., 2009; Jenkins et al., 2003; Ruangkanchanasetr, Plitponkarnpim, Hetrakul, & Kongsakon, 2005). A study of in Northeast Thailand found that prevalence rates for illicit drug use (3.3% vs 1.4%), alcohol consumption(39.9%,17.3%)and smoking tobacco (17.9%.4.9%) were higher in technical colleges than in academic school(Daosodsai et al., 2007).

Nakhon Ratchasima province has 24 vocational colleges with 37,621 technical and vocational students. A study of vocational student in Nakhon Ratchasima and Bangkok found that 60 % of students had consumed alcohol within 30 days and 8% had used marijuana. Students with low school commitment was strongly associated with illicit drug use. For students who less likely to use alcohol , with high level of moral belief, participation in religious activities approximately 40-60%. This study also highlight that peer influence is a significant contribute to vocational students(Wongtongkam et al., 2014).

2.8 Reproductive human right in Thailand:

The National Legislative Assembly (NLA) of Thailand approved a bill to address the teen pregnancy problem prevalent in Thailand. The Prevention and Remedial Measures for Adolescent Pregnancy Bill ("Adolescent Pregnancy" Bill), consisting of 23 sections, stipulates that young people aged 10 to 19 must be given access to reproductive health information and services. Schools must offer comprehensive sexuality education, provide consultations on pregnancy prevention and allow teenage

mothers to continue their studies at school until graduation. The Adolescent Pregnancy Bill also imposes a maximum jail term of one month and/or a fine of 10,000 Baht for anyone refusing to assist endangered teenagers.(AFPPD and 2016)

The act for Prevention and Solution of the Adolescent Pregnancy Problem, 2016

An adolescent has the right to make a decision by himself and has the right to information and knowledge, right to reproductive health service, right to confidentiality and privacy, and right to social welfare provision, that are equal and non-discriminative, and is entitled to any other rights for the purpose of this Act accurately, completely and adequately.

An educational establishment shall undertake the prevention and solution of the adolescent pregnancy problem as follows: (1) to provide teaching and learning on sexuality studies which is appropriate to age of pupils or students; (2) to recruit and develop teaching personnel to be capable of providing sexuality studies and counseling on the prevention and solution of adolescent pregnancy problem to pupils or students; (3) to establish a system of supervision, assistance and protection for Pregnant pupils or students to receive education in a suitable and continuous manner, including establishing a referral system to ensure the receipt of an appropriate reproductive health service and social welfare provision. The prescription of the categories of educational establishments and Undertaking of the educational establishments in each category shall be in accordance with the rules, procedures and conditions as prescribed in the Ministerial Regulation. (Thai National Legislative Assembly, 2016)

2.8.1 Reproductive health service for teen in Thailand

Since 2004, the Ministry of Education has formulated policies and guidelines in order to prevent sexual harassment in educational institutions. Guideline designed for schools and they are intended to prevent both sexual harassment committed both by teachers and students.9 In this case, the definition of sexual harassment is broadened to include rape and actions that aim to irritate and embarrass others sexually

In 2015, with the recommendation of the American College of Obstetrics and Gynecology and he Royal Thai College of Obstetricians and Gynaecologists suggested that contraceptive use among adolescent should use both of condom and long acting birth control listed as IUD and implant which is more effective than use only one contraception which is very popular in Thai adolescent. Furthermore for following the act for Prevention and Solution of the Adolescent Pregnancy Problem, 2016, and National Health Security Office implemented projects for preventing early pregnancy in Thai adolescents which started in year 2014 by funding for hospitals and health centers for providing IUD and implant for adolescents (Bureau of

reproductive health, 2018). The objectives of the projects are to provide the contraception services to adolescents and persuade them to use the services.

A study of provision of contraception services of 591 government and private hospital among 12 provinces including Bangkok reveals of prevention of early pregnancy and delay pregnant were satisfactory(Bureau of Reproductive health & UNFPA, 2015). Furthermore there was a study of 1,745 unmarried adolescents aged 17-20 in Chiang Mai, Thailand regarding safe sex and need for appropriate sexual and reproductive health services found that young Thais still prefer pharmacies for self-medication and use government health care facilities as a last resort(Tangmunkongvorakul et al., 2012). Another survey of teenagers of 439 teenagers aged 12-18 years, in Udon Thani, Thailand found that most of the adolescents did not aware of the reproductive health services including untrusted of health providers. (C. Sridawruang, 2016).

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

This study was designed as a quantitative cross-sectional descriptive study.

3.2 Study population

The population in this study was vocational students with the age group of 15-19 years that are studying in urban, suburban, and rural areas of Nakhon Ratchasima province.

3.3 Study Area

The study was done in Nakhon Ratchasima province which is the country's largest province located in the northeastern part of Thailand. It can be categorized as the most prosperous in this region. For **administrative**, Nakhon Ratchasima is divided into 32 districts. The districts are further subdivided into 263 sub-districts and 3743 villages. The urban area is Mueang Nakhonratchasima district defined as the area of city municipality which is located in Mueang district, where the provincial office administrative offices are located (Adkins, 1968; Spencer & Bryant, 2000). The vocational suburban area defined as the area out of city municipality and people come to work by daytime and back in the evening(Phonok, 2010). There are 7 districts located in the suburban area listed as; Sung Noen, Kham Thalay so, Pakthongchai, Chokchai, Non Sung, Non Thai, Chalermprakiat district. The rest is rural area.

There are obtained from 12 government vocational colleges all over in Nakhon RatchasimaThere are obtained from 12 government vocational colleges all over in Nakhon Ratchasima.

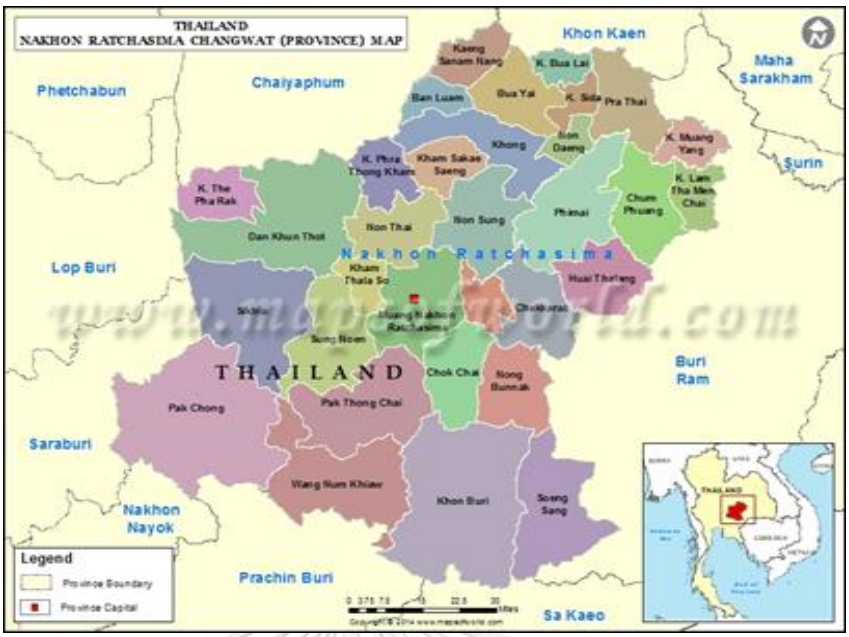


Figure 3 the area of Nakhon Ratchasima province

Source: (Map of the world , 2018)

3.4 Sample Size

The sample size was calculated by Cochran's formula (1977) In a cross-sectional survey among 50,033 high school and vocational college students from 201 schools in 40 provinces in Thailand the rate of sexual intercourse was 30.5% for males and 5.7% for females (Assanangkornchai et al., 2009; Peltzer & Pengpid, 2011). Therefore, based on this study, the proportion of sexual intercourses among vocational students was calculated as 30 % according to Cochran's Formula.

$$n = \frac{Z^2 p(1-p)}{d^2}$$

$$= \frac{(1.96)^2 (0.30)(0.70)}{(0.05)^2}$$

$$= 323$$

n = sample size

Z = Standard value for 95% confidence interval=1.96

d = error allowance=0.05

p = proportion of sexual intercourses among adolescent in Thailand = 30 % = 0.30

1-p = 1-0.3 = 0.7

The total sample size after adjustment was 322. Since there was a chance of non-availability, non-response, refusal or drop out to respond to questionnaires 10% will be added to the calculated sample size.

10% for refusal and withdrawal to participate = 32

Therefore, the total sample size = 323 +32 = 355

3.5 Sampling Technique:

Multistage stratified sampling combined with purpose and random sampling technique was used for data collection as shown in figure 3.

Step 1: Nakhon Ratchasima province was purposively selected among 72 provinces in Thailand due to considered as the biggest area of Thailand. In addition, Nakhon Ratchasima can be categorized as the most prosperous province in the northeast region. Hence, the Thai government has laid out the long-term economic goals in the 20 years National strategies (2017-2036) including the implementation of Thailand High-speed Rail Project, which will be finished in 2021.

Step 2: In the northeastern part of Thailand, data from the Office of Vocational Education Commission revealed that Nakhon Ratchasima province has the highest number of vocational colleges. There are 24 vocational colleges which categorized into 12 government and 12 private vocational colleges. Bureau of Vocational College of Nakhon Ratchasima province on 16 November 2017 showed that 23,558 students registered for Por Vor Chor 1 to 3. For 12 government colleges, the number of students who registered was 19,236, and 4,322 students were registered at 12 private vocational colleges. Therefore, the government colleges were purposely selected because of the higher number of students.

Step3: The chosen 12 government vocational colleges are 4 colleges in the urban area, 3 colleges in the suburban, and 5 colleges in the rural area.

Step 4: In each area, we purposively selected the vocational college with the highest number of students. For the urban area, we chose the Nakhon Ratchasima Technical College (n = 3760) which located in city municipality area of Mueang district, in Sub-urban area we selected the Suranaree Technical College (n = 1826) this college is located in Chokchai district, which located near Suranaree University of *Technology*, and for the rural area the Buayai Vocational College was selected in this study (n = 1429).

Step 5. A sample size of 355 students was selected from each location proportion of the students enrolled. Out of 355 sample size 190 (54%) students were

selected from Nakhon Ratchasima Technical College. 92 (26%) students were selected in equal number of gender of male and female from the Suranaree Technical College, and 73 (20%) students were selected in equal number of gender from the Buayai Vocational College.

Finally, 355 vocational students from three vocational colleges in three areas were recruited in this study.

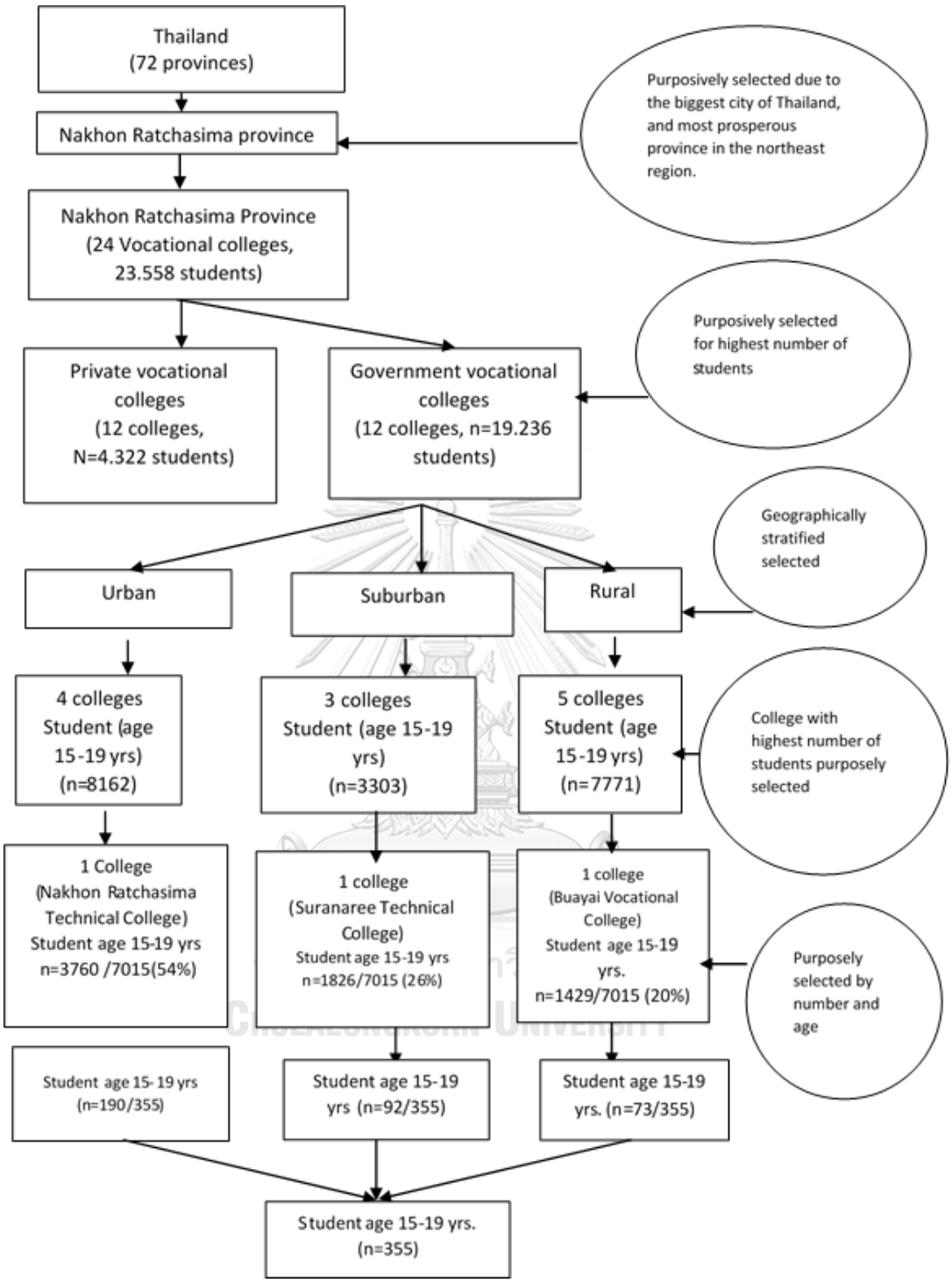


Figure 4 Sampling flow chart

3.5.1 Inclusion Criteria

- Vocational students both male and female,
- Age of 15-19 years old
- Students who are willing to participate and given verbal consent.

.5.1 Exclusion criteria

- Vocational students who suffered from serious illness, sick or cannot use hand to write.
- Absent on survey day
- **Students who have married.**

3.6 Measurement Tool

The data was collected by using self -administered questionnaires

Data Validity and Reliability

3.6.1 Construct Validity

The questionnaire is matched with the conceptual framework, sections and variables derived from the theoretical framework of the health belief model (Karen Glanz, 2008).

3.6.2 Content Validity

The questionnaires for modifying factors, socio-demographic (Q 1 - Q6) were prepared by literature reviewing (Yamakachi et al., 2016, Theodore et al., 2017). The questionnaires for knowledge and attitude (Q 7- Q 10) were prepared and modified by literature reviewing on previous studies relevant to this study (Mitiku & Assefa, 2017; Moe Moe Thandar, 2015; Opare, 2013; Orimadegun & Ilesanmi, 2015; San San Oo 1*, 2013).

The drug alcohol and smoking questions (Q11-13) were prepared by review literature (Griensven et al.,2003, Wongthongkam et al.,2014), and communication skills (Q 14) was validated by three reproductive health experts below.

The questions of perceptions and self-efficacy (Q15- Q19) were prepared and modified by literature reviews (Zugummy et al, 1998, Closson K et al 2017,). The questionnaires for cues to action Q 20 –Q 33 were validated by reproductive health experts (please see details below),

Safe sex behaviors Q34-Q40 were prepared and modified by literature reviewing (Griensven et al.,2003). For the condom uses Q41–Q 44 were prepared from PRAYA tool (Griensven et al.,2003), Contraceptive uses Q45–Q48 were prepared from illustrative questionnaires for interview-surveys with young people, World Health Organization (John Cleland, 2001)

After that, the questionnaire which was structured and modified by the researcher using guideline and not taken from already validated questions in the previous study was validated using item-objective congruence (IOC) by three reproductive health experts. 1**. Asst. Prof. Khemika Yamarat, Ph.D.**, College of Public Health Sciences, Chulalongkorn University, who has experience of more than 20 years in reproductive and sexual health, as well as sexual and health behaviors, including doing research and also principle investigation in research projects, 2. Dr. **Montakarn Chuemchit**, College of Public Health Sciences, Chulalongkorn University, who has an experience of more than 10 years in reproductive and woman health. 3. Mrs. Kruatip Chanthaneevivat, public health officer of HIV/AIDS and STIs bureau, Department of disease control, Ministry of Public Health, who is working in sexual health for more than 20 years, in Thailand. The IOC scores were +1 for agreement between the item and study variable (congruence), 0 for undecidable (questionable), and -1 for disagreement between items and study (Incongruence). The IOC scores by three experts were calculated and summed up and divide by three. If it was more than 0.75 (Turner & Carlson, 2003), questionnaires were accepted. If there was a question that less than 0.75, it was revised according to the mentioned experts' comments and advice. There were 5 questions that got the score less than 0.75., which had been revised as expert's mentioned. After revision of questions, the experts have consulted again and agreed, therefore IOC total score was 1 for all questions. The question No. 30 **"**Have you ever discussed sex-related issues with your mom best friends /your dad best friends?" was deleted from the questionnaire. The total number of questionnaires was 48 questions.

3.6.3 Face Validity

Face validity of questionnaire was checked during pre-test (see details below) which was done among vocation students in one of vocational college in the Chanaponkhan Technical college suburb area near central city, with similar characteristics to the study site for clarification and comprehension of each question. Nine students took part to a focus groups discussion about the questionnaire and asked to give feedback on the comprehension, logic flow, relevance of the questions as well as suggestions on rephrasing difficult questi Face validity of the questionnaire was checked during pre-test (see details below) which was done among vocational students in one of the vocational college in the Chanaponkhan Technical College suburb area near the central city, with similar characteristics to the study site for clarification and comprehension of each question. Nine students took part in a focus group discussion about the questionnaire and asked to give feedback on the comprehension, logic flow, relevance of the questions as well as suggestions for rephrasing difficult questions.

3.6.4 Pre-test and reliability

Pre test

The purpose of the pretest was to know respondents' comprehension regarding each question in the questionnaire (face validity), the flow of the questionnaires, including duration of the questionnaires, whether the contents of questionnaires were relevant for respondents able to answer or not and to check the internal consistency of the questionnaires.

After receiving ERB approval and authorization of school authorities, which was issued after submission to them of ERB approval, The pre-test or pilot test was conducted in Chanaponkhan Technical College, in the area of Mueang. This college is 10 kilometers far from Mueang district with the same characteristics and similar geographical location in the study areas. Moreover, students from pretest area would not participate in the study and not contaminate the study areas. The pretest was done by principal researcher among 10% of the sample size, 35 students age between 15-19 years. In accordance with the pilot test's results, some questions were adjusted and revised after the pilot test.

Reliability

The pretest was also used to assess the internal consistency reliability of questions. The Kuder-Richardson-20 (KR-20) was used to identify the internal consistency reliability of knowledge of HIV and STIs contraception, reproductive health, while Cronbach's Alpha was used to test the attitude and perception (Chamroonsawasdi et al., 2017) (Chamroonsawasdi K. et al.,2017, Bruce Thompson,2016) in SPSS software. Kuder-Richardson and Cronbach's Alpha level with above cutoff point of 0.70 (Bland & Altman, 1997) was accepted because it means more than 70 percent of the measured variance is reliable and the remaining less than 30 percent is due to random error.

The results from KR-20 for pretest of 10 questions of knowledge of HIV and STIs showed 0.96 and after data collection was 0.89. For 13 questions of knowledge of contraception, the result was 0.97 and 0.88, after collecting data, and 6 questions of reproductive health and reproductive rights knowledge were 0.93 and 0.80 after collecting data.

The Cronbach's alpha for per test showed 4 questions of attitude toward reproductive health was 0.90 and after data collection 0.55 (urban 0.73, suburban 0.10 and rural 0.10), then 16 questions of perceptions 0.94 and 0.86 after data collection. Finally, 2 questions of self-efficacy were 0.88 and 0.82 after collecting data.

3.6.5 Translation

After validating and performing reliability test, the questionnaire was translated into Thai language by an independent translator who is working as a researcher in the reproductive health field as an academic translator who has expert skills with the competency of English and Thai language. The translated Thai questionnaire was translated back to English questionnaires by second reproductive health expert with satisfied proficient English and Thai Language who works at International Committee of the Red Cross (ICRC) in the regional office which is a non-government organization. In order to ensure correspondence between Thai and English, the translator did not see the original English questionnaire. If there was any discrepancy between the two translations, the two translators would meet and the principal researcher would act as a mediator with two translators for a final wording.

3.6.6 Components of Measurement Tool

The questionnaire was divided into five components listed as modifying factors, perception of sexual behavior, self- efficacy, cues to action, and sexual practice.

3.6.6.1. Part 1. Modifying Factors

Socio- demographic characteristic

- This part includes age, sex, religion, grade point average (GPA), living arrangement, monthly income/ pocket money, Q 1- Q6 were taken from validated literature (Yamakachi et al., 2016, Theodore et al., 2017)**.**

Structural variables

This part had 38 questions together from Q7- Q 14 with topics of

Knowledge sections

- Knowledge of HIV and STIs with 10 questions from question No 7.1-7.10 were taken from already validated questionnaires from illustrative questionnaires for interview-surveys with young people (**World Health Organization)**. The participant obtained 1 point for each correct answer and 0 for an incorrect and uncertain answer. The score range was from 0 to 29, with all correct question as yes except for question 7.5.3, 7.5.4,7.5.6,7.5.7, 7.7.6, 7.8.4,7.8.5 the answers are no (reverse coding) was classified into three levels as follows by Benjamin Bloom's criteria (Bloom,1968).

  Low level of Knowledge (< 60%) < 17 scores
  Moderate level of Knowledge (60% - 80%) 17-23 scores

High level of knowledge (>80%) >23 scores

- Knowledge of contraception with11 questions from question No 8.1-8.11, and knowledge of reproductive health from question 9.1-9.2 were taken from already validated illustrative questionnaires for interview-surveys with young people, **(World Health Organization**). The answers were yes, and no. The participant gets 1 point for each correct answer and 0 for incorrect. Knowledge of contraception score range was from 0 to 20, and was classified into three levels as follow by Benjamin Bloom's criteria (Bloom,1968)

Low level of Knowledge (< 60%)	< 12 scores
Moderate level of Knowledge (60% - 80%)	12-16 scores
High level of knowledge (>80%)	>16 scores

- Knowledge of reproductive health and reproductive right was measured by 6 questions with yes and no answer. The participants gets 1 point for each correct answer and 0 for incorrect. Knowledge of reproductive health score range was from 0 to 6 and was classified into three levels followed by Benjamin Bloom's criteria (Bloom,1968).

Low level of Knowledge (< 60%)	< 1.2 scores
Moderate level of Knowledge (60% - 80%)	1.2-4.8 scores
High level of Knowledge (>80%)	>4.8 scores

- Attitude towards reproductive health was measured by four questions from question 10.1-10.4 questions whether they agreed or disagreed with the statement used in 4 points Likert's scale, which was ranged from strongly agree to strongly disagree. The scores ranged from 4-16.

Positive statement (3)		Negative statement (1)	
Choice	scores	Choice	scores
Strongly agree	4	Strongly agree	1
Agree	3	Agree	2
Disagree	2	Disagree	3
Strongly disagree	1	Strongly disagree	4

The standard point for the attitude was mean ± standard deviation. The level of attitude is classified as follows.

Negative attitude : score < mean - 2 standard deviation,

Neutral attitude : score mean ± 1 standard deviation

Positive attitude : score > mean + 2standard deviation

- Behaviors were measured on drug, alcohol and smoking behavior, Q 11-13 were taken from validated questionnaires of PRAYA tool (Griensven et al.,2002). The score was ranged from 0- 6, which scaled from no risk, low and high-risk behavior.

  No risk score = 0

  Low risk Scores < mean - standard deviations

  High risk Scores ≥ mean + standard deviations

- Sexual harassment contains 1 question (Q34) was taken from the already validated questionnaire from illustrative questionnaires for interview-surveys with young people, WHO. The answer yes for sexual harassment was unsafe sex, and the answer no was defined as having safe sex.

- Communication skills. were measured on communication with people about sexual behaviors question 14.1 to 14.7. The participant obtained 1 point for yes answer and 0 for no answer. For question 14.1 if answer yes for no one got 0 point. The question 14.1.1-14.1.7 were for participants who had no partner. The score was ranged from 0 to 8. The scale was poor or good communication**.**

  Poor communication: - Scores< mean – standard deviations

  Good communication - Scores ≥ mean + standard deviation

  For participants, who had a sex partner(s), answers from question 14.1-14.7 the score was ranged from 0-13. The level of communication was poor and good communication.

  Poor communication - Scores< mean - standard deviations
  Good communication - Scores≥ mean + standard deviations

3.6.6.2 Part 2: Perception towards disease and sexual behavior

This part has 19 questions from Q15-Q18. The questions were prepared and modified by literature (Mitiku & Assefa, 2017).

- **Perceived Susceptibility**

Question numbers 15.1-15.4 are 4 grade of susceptibility level from very high to none and were scored using 4 point Likert's scale as follow;

Negative statement	
Choice	scores
Very high	4
High	3
Low	2
None	1

The calculating scores of perceived susceptibility, the cut-off point was mean Scores ± standard deviation. Every individual's answers of perceived susceptibility were summed up and calculated mean and standard deviations. The score range was from 4-16. The level of perceived susceptibility was classified as follows;

Low perception Scores < mean - standard deviations

High perception Scores ≥ mean + standard deviations

- **Perceived severity**

This part contains 5 questions with the statement used in Likert's Scale. Questions 16.1 -16.5 were taken from the literature review (Zugumny et al ,1998 and Irayama S, 2006). For scoring of perceived severity level, responds to statements are ranged from strongly agree to strongly disagree and was be scored using 4 point Likert's scale as follows (Mitiku & Assefa, 2017).

Positive statement (3)		Negative statement (2)	
Choice	scores	Choice	scores
Strongly agree	4	Strongly agree	1
Agree	3	Agree	2
Disagree	2	Disagree	3
Strongly disagree	1	Strongly disagree	4

For calculating scores of perceived severity, the cut-off point was a mean score ± standard deviation. All individual's answers for perceived severity was summed up and calculated mean and standard deviations. The score range from 5-20 and the level of perceived severity was classified as follows:

Low perception - Scores<mean - standard deviations
High perception - Scores ≥mean + standard deviations

- **Perceived Benefits**

This part contains 3 questions with the statement used in Likert's Scale. All questions from 17.1-17.3 are positive statements and were taken from validated literature. For scoring of perceived benefits level, responds to statements are ranged from strongly agree to strongly disagree and was scored using 4 points Likert's scale as follows (Mitiku & Assefa, 2017).

Choice	scores
Strongly agree	4
Agree	3
Disagree	2
Strongly disagree	1

For calculating scores of perceived severity, the cut-off point was mean scores ± standard deviation. All individuals' answer for perceived benefit was summed up and calculated mean and standard deviations. The score ranges from 3-12. The level of perceived severity was classified as follows:

Low perception - Scores<mean - standard deviations
High perception - Scores≥ mean + standard deviations

- **Perceived barriers**

This part will contain 4 questions with the statement used in 4 points Likert's scale. All questions are negative statements from,. questions 18.1-18.4 were taken from WHO questionnaire interview from young people by John Cleland and from Prevalence PRAYA study (Griensven et al, 2002). For scoring of perceived barrier level, responds to statements are ranged from strongly agree to strongly disagree and was scored 4 points Likert's scale as follow;

Negative statements

Choice	scores
Strongly agree	1
Agree	2
Disagree	3
Strongly disagree	4

For calculating scores of perceived barriers, the cut-off point was mean scores ± standard deviation. All individual's answers for perceived barrier was summed up and calculated mean and standard deviations. The score ranges from 4-16. The level of perceived barriers was classified as follows.

Low perception	- Scores< mean - standard deviations
High perception	- Scores≥ mean scores + standard deviations

3.6.6.3 Part 3 self-efficacy

This part will contain 2 questions with the statement used in Likert's scale. All questions are positive statements. Questions 19.1-19.2 were taken from validated questionnaires (Closson K, 2017). For scoring of perceived self-efficacy level, responds to statements are 'Yes to No' and scored 4 points Likert's scale as follow;

Positive statement	scores
Yes	4
Probably Yes	3
Probably No	2
No	1

For calculating scores of self-efficacy, the cut-off point was mean scores ± standard deviation. All individual's answers for perceived self-efficacy was summed up and calculated mean and standard deviations. The score range was from 2-8. The level of perceived self-efficacy was classified as follows;

Low	- Scores<mean - standard deviations
High	- Scores≥mean scores + standard deviations

3.6.3.4 Part 4. Cues to safe sex behavior

For cues to safe sex behavior practice, it will contain 14 questions Q20 –Q33. All questions were based on literature and structured by researchers and experts was validated by experts. The participant gets 1 point for answering 'yes' and 0 point for answering 'no' The score range is from 0 to 14, and was classified into two levels as follows:

The mean scores for cues to safe sex behavior practice were calculated and categorized into as follow by using mean scores± standard deviation;

Low - Scores < mean - standard deviations

High - Scores ≥ mean scores + standard deviations

3.6.3.5 Part 5. Adolescence safe sex behavior

There are three sub-components of safe sex practice with 15 questions (Q34-Q48) define as part A: sexual behavior listed as sexual harassment, abstinence and sexually active, Part B condom use and Part C contraceptive use. All questions were taken from a validated questionnaire of illustrative questionnaires for interview-surveys with young people, WHO by John Cleland, 2001, and PRAYA tool (Griesven et al.,2003).

- **Abstinence** contains 2 questions (Q35-Q36), for sexual active questions 4 questions (Q37 –Q40) were taken from the already validated questionnaire from illustrative questionnaires for interview-surveys with young people, WHO. The answer yes for abstinence was safe sex, and the answer no was defined as having sexual intercourse.
- **Condom use** it contains 4 questions Q41 –Q44 was based on PRAYA Tool. The answers 'yes' for both condom use for first and latest sexual intercourse and used correctly for the first and latest sexual intercourse was safe sex. The answers no condom use for first and latest sex intercourse and no for correct condom use was unsafe sex.
- **Contraception** it contains 4 questions Q45 –Q48. All questions were based on illustrative questionnaires for interview-surveys with young people, World Health Organization and PRAYA tool. With all correct question as yes except for question 46.6,46.8,48.6,48.7 the answers are no (reverse coding) was classified into 2 group for safe and unsafe sexual intercourse.

3.7 Data Collection

Data collection was performed by the principal researcher and one research assistant. The research assistant who is working in the reproductive health field was recruited for this study. The principal researcher was and one research assistant for one day prior to data collection in order to reduce bias. The training was divided into two sessions listed as theoretical and practice session. The theoretical session will include the purpose of research (research objectives), research methodology, the process of taking consent and detailed information about question unclear or want to know more. Then follow by the practice session, research assistant has to do role-play section to instruct students how to answer. The assistant has to practice at least two times in a role play, and during the role play the principal researcher will observe and correct the assistant to minimize the bias.

Data collection was carried out in August -October 2018.

The procedure of data collection was as follows;

1. The researcher had pre-visited the vocational colleges for surveying the location and collected the number of students.
2. Formal letters from the College of Public Health Sciences was sent to obtain permission from the Department of Vocational Education center in Bangkok and received the recommendation to the vocational education center in Nakhon Ratchasima province, and finally obtained the permission from the targeted study area.
3. The researcher visited the registration officer of each vocational colleges for getting the list of the students chosen purposively of age and sex, of year 1 to year 3 of Professional Education Certificate (Por Wor Chor) and made an appointment for the date of data collection.
4. Then all the eligible students were gathered in the assembly hall or classroom in the colleges to answer the questionnaires.
5. The teacher was invited to leave the room before disseminating the questionnaires.
6. The respondents were asked to seat in space to ensure their confidentiality and privacy to answer the questionnaires.
7. The researcher and research assistants explained the aims of the study and convinced the confidentiality of respondents is guaranteed.
   The researcher and research assistants asked participants for verbal consent before disseminated the questionnaire and participant information sheet.
8. The consent for the respondents who were aged less than 18 was waived (please see appendix c).
9. The respondents full filled the questionnaire within 45 minutes. If students had any doubt of questions, the researcher and/or research assistants answered appropriately.
10. After all the respondents finished to fully fill the questionnaire, the researcher and research assistants collected the questionnaire and the informed consent.
11. All respondents were invited to leave the room at the same time.
    Note: For the Suranaree Technical College and Buayai Vocational College the verbal consent form and data collection were done as mention above. Except for Nakhon Ratchasima Technical College, the collection of data could not be done properly. This is not the best time to collect data due to the schedule of students because the day of data collection was one week before the final exam, students paid more attention and did not want to answers questionnaires. However,, the teachers could manage to collect data but maybe the students had more tension so some answers was not paid much attention on.

3.7 Statistical analysis

Data Entry and Data Analysis

Principle researcher checked the data and the questionnaire was coded before entering data to the computer. After that, data entry was done by double entry process. Data analysis was processed by using SPSS software version 22 (licensed from Chulalongkorn University) for windows. Descriptive statistics was performed as the following table.

Categories of analysis of data

- Age was categorized into 3 groups; group 1: 15 years, and Group 2: 16- 17 years old, group 3:18-19 years (Chomsri et al., 2018).
- Sex characteristics were categorized into two groups; Male and Female according to general concepts and previous studies - male had sexual intercourse more than female (Baokhumkong, Leetongdee, Rohitrattana, & Jaichuang, 2017).
- Religion was categories into 6 groups for Buddhist, Christian, Muslim, Hindu, and None and others according to a previous study (Tangmunkongvorakul et al.,2010).
- Grade Point Average (GPA) as categories into 2 groups; group 1: < 2.0, group 2: >2.0 according to previous study (Baokhumkong et al,2017).
- Living arrangement was categorized into 10 groups for analysis; 1) live with father and mother,2) live with father only, 3) live with mother only, 4) live with another family (not relative), 5) live with a relative (brother, sister, uncle, aunt) 6) live alone in student dormitory, 7) shared room in student dormitory, 8) living alone in rented room (not dorm) 9)share room (rent room), 10) other specified according to the general concept of vocational students in Thailand and previous study (Tangmunkongvorakul et al.,2010).
- Monthly income was categorized into 2 groups; group 1: ≤ 5000 baht, group 2: ≥ 5000 baht. According to the minimal cost of living in the northeast region of Thailand and previous studies (Baokumkhong et al.,2017).
- Knowledge of HIV, STIs was categorized into three groups; poor, moderate and good knowledge using Bloom Criteria according to literature (Yimer, 2014).
- Knowledge of contraception was categorized into three groups; poor, moderate and good knowledge using Bloom Criteria according to literature (Yimer, 2014).
- Attitude of reproductive health was categorized into two groups for positive and negative attitude.

- Drugs, alcohol, and smoking behaviors were measured into 2 groups of high risk and low risk behavior by using mean scores ± standard deviation.
- Communication skills were categorized to 2 groups of confident and not confident by using mean scores ± standard deviation;
- Perceived susceptibility were categorized into 2 perceptions for high and low perception using mean scores ± standard deviation.
- Perceived severity were categorized into 2 groups for high and low perception using mean scores ± standard deviation;
- Perceived benefits were categorized into 2 groups for high and low perception using mean scores± standard deviation;
- Perceived barriers were categorized into 2 groups for high and low perception using mean scores± standard deviation;
- Self-efficacy were categorized to high and low self – efficacy using mean scores ± standard deviation;
- Cues to action were categorized into low and high using mean scores ± standard deviation.
- Adolescence safe sex behaviors were categorized as safe and unsafe sexual behaviors.
  - Abstinence was categorized for safe sexual practice.
  - Condom use for the first and latest sexual intercourse and correct use for the first and latest sexual behavior for safe and unsafe sexual behaviors.
  - Contraceptive use for first and latest sexual intercourse for safe and unsafe behaviors.

Table 1 Variable , measurement scale and descriptive statistics

Variables	Measurement scale	Descriptive statistic
Modifying Factors		
A. Socio-demographic characteristic		
-Age 15-16 years 16-17 years 18-19 years	Ordinal Scale	Number, Percentage, Mean, S.D
-Sex	Nominal scale	
-Religion	Nominal scale	Number, Percentage
-Grade Point Average GPA	Ordinal scale	Number, Percentage
-Living arrangement	Nominal scale	Number , Percentage
-Monthly income/pocket money	Ordinal scale	Mean, S.D Number, Percentage
B. Structural variable		Frequency , Percentage
-Knowledge of HIV, STIs	Ordinal scale	Mean, S.D
-Knowledge of contraception	Ordinal scale	
-Knowledge of reproductive health	Ordinal scale	Frequency Percentage Frequency Percentage
- Attitude of reproductive health	Ordinal scale	Frequency Percentage Frequency Percentage
-Drugs, alcohol, and smoking behaviors	Nominal scale Nominal scale	Mean, SD Frequency Percentage
-Sexual harassment	Nominal scale	Frequency Percentage
-Communication skills	Nominal scale	Frequency Percentage Frequency Percentage
II Perception		

Variables	Measurement scale	Descriptive statistic
a.Perceived susceptibility	Ordinal scale	Frequency, Percentage, Mean, S.D
b. Perceived severity	Ordinal scale	Frequency, Percentage, Mean, S.D
c. Perceived benefits	Ordinal scale	Frequency, Percentage, Mean, S.D
d. Perceived barriers	Ordinal scale	Frequency, Percentage, Mean, S.D
III. **self – efficacy**	Ordinal scale	Frequency, Percentage, Mean, S.D
IV cues to actions - Internet - Health education - Symptoms of STIs -Peers -Family -Social culture influence	Nominal scale	Frequency, Percentage,
V. Adolescent safe sex behaviours • Abstinence • Condom use for the first and latest sexual intercourse • Contraceptive use for first and latest sexual intercourse	Nominal scale Nominal scale Nominal scale	Frequency, Percentage. Frequency, Percentage.. Frequency, Percentage.

Independent Variables	Dependent Variable	Bivariate Analysis	Multivariate Analysis

Inferential Statistics

Bivariate Analysis: Associations between independent variables and dependent variables were analyzed by using Pearson's Chi-square test with a statistical significance level of less than 0.05. When the frequencies of cells less than 5, Chi-square approximation may not be reliable, and so, Fisher's exact test with statistical significance level of less than 0.05 was used.

Multivariate Analysis: In order to find out the clear associations between multiple independent variables and a dependent variable at the same time, multiple logistic regression was used in order to find out the association between multiple independent variables and dichotomous dependents variables. Since the dependent variables listed as abstinence, condom use for the latest sexual intercourse, and contraceptive use correctly for the latest sexual intercourse was arranged as dichotomous outcomes, multiple logistic regression with "forward conditional" stepwise method was used.

For multivariate analysis, the variables which were significant at the level of p-value less than 0.2 at bivariate analysis, plus those variables that were theoretically important or had been cofounders in prior research (even with significance >0.2) was the first step of regressions. Then, variables with p-value of greater than 0.05 were excluded from the analysis to get the final model. Multiple Logistic regression was used to determine whether there is a statistically significant relationship between multiple independent variables and a dichotomous dependent variable. Multivariable models waa built to assess the individual impact of several confounding factors on the variance of a continuous variable. Variables with p-value <0.2 were analyzed using multivariate analysis. The predictors in the final regression equation were accepted according to a repeated backward regression method and the quality of the model was described using the accuracy of the prediction by adjusted $R.^2$

I.Modifying Factors **A.Socio-demographic characteristic** -Age (15,16),(16,17) (18,19) -Sex -Religion -Grade Point Average GPA -Living arrangement -Monthly income/pocket money **B. Structural variable** -Knowledge of HIV, STIs -Knowledge of contraception -Knowledge of reproductive health - Attitude of reproductive health -Drugs, alcohol, and smoking behaviors -Communication skills **II. Perception towards diseases and sexual practice** a. Perceived susceptibility b. Perceived severity c. Perceived benefits d. Perceived barriers **III. Self- efficacy** **IV Cues to actions**	**Adolescent safe sex behavior : safe or not safe** (Dichotomous Outcomes)	Chi-square test Fisher's exact test (If the cells frequencies are less than 5)	Multiple Logistic Regression

3.9 Ethical Consideration

Thesis proposal and its measurement tools were reviewed and approved by Chulalongkorn University, College of Public Health Sciences. The purpose of the study and the objective was explained to the participants before answering the questionnaire. The confidentiality of the participation was ensured by assuring that the information provided by the participants was only available to the principal researcher which was destroyed after the research. It was a voluntary participation and no one was forced to participate in this study. The participant has have the freedom to withdraw at any time from the interview. The data collected was used for the purpose of research only. This study reached ethical reviewed of Jor Vor 823/2561, date 2 August 2561.

CHAPTER IV

RESULT

This study aimed to describe the modifying factors, socio-demographic characteristics, structural variables, perceptions, self- efficacy, cues to actions and adolescent safe sex behaviors and to analyze the relationship between them among vocational students in Nakhon Ratchasima province, Thailand. The study population consisted of vocational students from 3 colleges in urban, suburban and rural area in Nakhon Ratchasima province. Out of 332 vocational students, 187 were sexually active (had sexual intercourse, and 147 were sexually inactive (abstinence).

The first section of the result part focuses on describing the all modifying factors such as socio-demographic characteristics, knowledge, attitude-behavior and communication skills, perception towards diseases, self-efficacy, cues to action and safe sex behaviors.

Then, the second section concentrates on the bivariate and multivariate analysis between independent variables and dependent variables. Dependent variables are sexual harassment, abstinence, condom use and use of contraception and use for the latest sexual intercourse for sexually active respondents, and intended use of contraception in the future for all respondents. The data of safe sex behaviors is again divided into sexual harassment, abstinence, condom use and contraception use. In this way, there are total 22 dependent variables in this study, and relationships between all independent variables and dependent variables are analyzed.

Part I: Descriptive Findings

1 . Modifying factors

4.1 Socio-demographic Characteristics

4.1.1 Age group, Sex, Religion, Grade Point Average (GPA), Living Arrangement, and Monthy incomes/Pocket money

Table 4.1 showed that about some of the socio-demographic characteristics of the respondent 177 in urban, 82 suburban and 73 rural areas in Nakhon Ratchasima, Thailand. The age of the respondent was between 15 to 19 years. By categorizing into

three age groups, about 50 % respondents were included in 16-17 years age group. Out of 332 respondents, 192 (57.8%) were male, and 140(42.2%) were female. As for religion almost all of them are Buddhist (95%) and another 5% are others such as Christian, Hindu, Muslim and no religion.

For GPA female had higher grade than male for all 4 categories, about 108 (35 %) out of 332 included in between 2.51-3. Over half of the respondents, 58.5% living with parents and about 72% had an income of < 150 US$ 5000 baht per month.

Table 2 Socio-demographic characteristic among students

Variables	Population Groups		
	Male (n=192) (%)	Female (n=140) (%)	Overall (n=332) (%)
Location			
Urban	110(57.3)	67(47.9)	177(53.3)
Suburban	45(23.4)	37(26.4	82(24.7)
Rural	37(19.3)	36(25.7)	73(22.0)
Age (years)			
15	31(16.4)	27(19.6)	58(17.7)
16-17	98 (51.9)	64(46.4)	162(49.5)
18-19	60 (31.7)	47(34.1)	107(32.7)
Religion			
Buddhist	174(90.6)	137(97.9)	311(93.7)
Christian	9 (4.7)	1 (0.7)	10(3.0)
Muslim	3(1.6)	0 (.0)	3(0.9)
Hindu	2(1.0)	1 (0.7)	3(0.9)
No religion	4(2.1)	1 (0.7)	5(1.5)
Grade Point Average(GPA)			
1.00-2.50	41(21.4)	11 (7.9)	52(15.7)
2.51-3.00	58(30.2)	50 (35.7)	108(32.5)
3.01-3.50	46(24.0)	42 (30.0)	88(26.5)
3.51.4.00	43(22.4)	35 (25.0)	78(23.5)
Missing data	4(2.0)	2(1.4)	6(1.8)

Variables	Population Groups		
	Male (n=192) (%)	Female (n=140) (%)	Overall n=332 (%)
Living arrangement			
Live with father and mother	119(62.0)	70(50.0)	189(56.9)
Live with father only	11(5.7)	11(7.9)	22(6.6)
Live with mother only	22(11.5)	14(10.0)	36(10.8)
Live with another family	2 (1.0)	2(1.4)	4(1.2)
Live with a relative(brother, sister, uncle, etc	17(8.9)	24(17.1)	41(12.3)
Live alone in student dormitory	13(6.8)	3 (2.1)	16(4.8)
Share room in student dormitory	1(0.5)	5(3.6)	6(1.8)
Living alone in renting room	3 (1.6)	5 (3.6)	8(2.4)
missing data	4(2.1)	6(4.3)	10(3.0)
Monthly income			
<150 U$ (<5000 THB)	119(62.0)	75 (53.6)	194(58.4)
≥150 U$ (> 5000 THB)	27(14.6)	45 (32.1)	73(22.0)
missing data	45(23.4)	9(14.3)	65(19.6)

B) Structural Variable

4.2 Knowledge of HIV and STIs

Table 3 showed that the table has 12 indicators of knowledge of HIV. Female had higher knowledge than male for all 13 indicators. There were 2 indicators that both male and female gave correct answers more than 50% , 68.8% of female and 55.0% of male knew that there is a treatment for HIV infection that prolong healthy life, and 50.0% of male and 49.3 % of female knew that having sex without condom use only one will not infect a person with HIV/AIDS. Then only 30.9% of female and 29.1% of male revealed that HIV and AIDS difference. 51.4% of female and37.8% of

male knew AIDS is condition and HIV is virus cause AIDS. About 81.3% of female and 58.5% knew that HIV can be transmitted with sharing needled and syringe , and 84.9 % of female and 61.4% of male knew that blood transfusion also can be transmitted HIV. For mother to her baby 64% of female and 52.1 of male knew. Nearly 50% both male and female belief that HIV could transmit from insect and mosquito bite and using same toilet. Overall the level of knowledge of HIV was poor and male (61.5%) had poorer knowledge than female (36.4%) as show below.

Table 3 Correct knowledge of HIV among students

Knowledge of HIV*	Male (n=192) (%)	Female (n=140) (%)	Overall N=332 (%)
Is HIV and AIDS difference?	55(28.6)	43(30.7)	98(29.5)
AIDS is a condition, HIV is a virus that can cause AIDS.	71(37.0)	71(50.7)	142(42.8)
There is treatment for HIV infection that prolong healthy life.	104(54.2)	95(67.9)	199(59.9)
Having sex without condom use only once will not infect a person with HIV/AIDS.	95(49.5)	69(49.3)	164(49.4)
How do you think the AIDS virus (HIV) can be transmitted?			
Sharing contaminate needles and syringe	110(57.3)	113(80.7)	223(67.2)
Blood transfusion	116(60.4)	118(84.3)	234(70.5)
Shaking hand	123(64.1)	108(77.1)	231(69.6)
Kissing on the cheek	111(57.8)	99(70.7)	210(63.3)
Having sexual intercourse	114(59.4)	103(73.6)	217(65.4)
From insect/mosquito bite	79(41.1)	82(58.6)	161(48.5)
Using the same toilet	100 (52.1)	85(60.7)	185(55.7)
From mother to her baby	98(51.0)	89(63.6)	187(56.3)

*participants with correct answers only

Table 4 level of knowledge of HIV among students

Level of knowledge of HIV	Male (n=192) (%)	Female (n=140) (%)	Overall N=332 (%)
Poor level of knowledge(<60 %)	118(61.5)	51 (36.4)	169(50.9)
Moderate level of knowledge (60-80%)	47(24.5)	51(36.4)	98(29.5)
High level of knowledge (>80%)	20 (10.4)	35(25.0)	55(16.6)

***** Participants with correct answer only

Knowledge of STIs

Table 5 showed the answer of 17 indicators of knowledge of STI. The indicators also showed that female had a higher knowledge than male for all indicators. For the question of apart from HIV/AIDS, they could catch STIs disease from sexual intercourse female had 94.2% and male had 71.4%.

Regarding the STI diseases, Gonorrhea was the most well know disease for both female(78.9%) and male (64.7%), then followed by Chlamydia 66.2% of female and 42.7% for male. For viral warts 59.3% of female and 58.0% of male knew, less than half of the respondents 43.6% of female and 31.8% had heard about Syphilis. Male (26.6%) had higher knowledge of Trichomoniasis than female (20.7%).

For the signs and symptoms of STIs, discharge from genital organ was well known by both male and female (69.3%) and male(47.9%), followed with pain during urination 37.0 % of male. For ulcer/sores in the genital area also over half for both female (56.4%) and male (37.0%). Only 40.0% and 27.1% of female and male (30.2%, 29.7%) had correct answers for understanding that bleeding from anus and hemorrhoid were not the signs and symptoms of STIs.

For treatment of STI, 92.1 % and 91.4% of female knew they can get treatment from private and government hospital, for male had only 62.5% and 56.3% that can be treated from government and private hospital respectively.

Table 4 Correct knowledge of STIs among students

*Knowledge of STIs	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Apart from HIV/AIDS, there are other diseases that man and women can catch by having sexual intercourse	156(81.3)	133 (95.0)	289(87.0)
Have you heard of any of these diseases?			
Syphilis	61(31.8)	61 (43.6)	122(36.7)
Gonorrhea	101(52.6)	105(75.0)	206 (62.0)
Chlamydia	82(42.7)	88(62.9)	170(51.2)
Trichomoniasis	51(26.6)	29(20.7)	80(24.1)
Viral warts	91(47.4)	83(59.3)	174(52.4)
Renal stone	31(16.1)	17(12.1)	48(14.5)
What are the signs and symptoms of a sexually transmitted diseases?			
Discharge from genital organ	92(47.9)	97 (69.3)	189(56.9)
Pain during urinate	71(37.0)	89(63.6)	160(48.2)
Ulcers/sores in genital area	71(37.0)	79 (56.4)	150(45.2)
Hemorrhoid	58(30.2)	56(40.0)	114(34.3)
Bleeding per anus	57(29.7)	38 (27.1)	95(28.6)
STIs can be treated?	69 (35.9)	77 (55.0)	146(44.0)
If your friends needed treatment of STI, where could he or she obtained such treatment?			
Grocery	106 (55.2)	100 (71.4)	206(62.0)
Pharmacy	66 (34.4)	45 (32.1)	111(33.4)
Government Hospital	120 (62.5)	128(91.4)	248(74.7)
Private hospital , clinic	108 (56.3)	129(92.1)	237(71.4)

* participants with correct answers only

Level of knowledge of STIs among students

Regarding the level of knowledge of STI overall had poor knowledge (51.5%), only 13.6% of female and 6.8% of male had high level of knowledge as shown below

Table 5 Level of knowledge of STIs among students

Level of knowledge of STIs	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Poor level of knowledge(<60 %)	103(53.6)	68(48.6)	171(51.5)
Moderate level of knowledge (60-80%)	40(20.8)	46(32.8)	86(25.9)
High level of knowledge (>80%)	13(6.8)	19(13.6)	32(9.6)
missing data	36(18.8)	7(5.0)	43(13.0)

* participants with correct answers only

Level of Knowledge of HIV and STIs

Table 7 showed three levels of knowledge among respondents. Out 332 respondents 144 (43.3%) has low level of knowledge. Male (45.3%) had lower level of knowledge than female (40.7%).The score was 0 to 29 scores for low level was defined when the score was less than 17.4(17.3) scores out of total 27 scores , moderate level between 17.4-23.3 score, and high level more than 23.4 score. Only 17(12.2%) of female and 6 (3.1%) of male had high score as show below.

Table 6 Level of knowledge of HIV and STIs among students

Level knowledge of HIV STI	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Low level (<60%)	87 (45.3)	57(40.7)	144(43.4)
Moderate level (60-80%)	59 (30.7)	57(40.7)	116(34.9)
High level (>80%)	6 (3.1)	17(12.2)	23(6.9)
Missing data	40 (20.9)	9(6.4)	49(14.8)

4.3 Knowledge of contraception

Table 8 showed 21 indicators of knowledge of contraception. The indicators also showed that female had higher knowledge than male for all indicators. The most well-known of contraception they have heard was condom use about 92.9 % of female and

71.6% of male and only 76.4% of female and 52.6% of male knew how to use condom correctly.

Following with emergency contraceptive pill 91.4% of female and 71.6 % of male, and 78.6 % of female and 47.9% of male knew how to take emergency contraceptive pill.

Regarding oral contraceptive pill 88.6% of female and 68.8% of male, and 58.3 % of female and only 30.7% of male knew how to take the pill correctly.

For long action contraception injection, 72.9 % of female knew and only half of male had knowledge, interestingly only 35% of female and 24.0% of male knew the place to get injection. Also for IUD 82.9% of female 51.9% of male had heard and only half of them knew the place for getting services.

For optional contraceptive use listed withdrawal before ejaculation for preventing pregnancy female (69.3%) and male (47.4%) had heard and 42.9% of female, 33.9% of male knew the method, followed with periodic abstinence 50% of female and 34.4% of male had heard of safe period, however female (51.4%) knew about safe period higher than male(37.5%) as shown below.

Table 7 Correct knowledge of STIs among students

Knowledge of contraception*	Male n=192 (%)	Female n=140 (%)	Overall n= 332 (%)
What kind of contraceptive methods have you ever heard of? (Multiple answers)			
Oral Contraceptive pill	129 (67.2)	124 (88.6)	253(76.2)
Long acting contraception injection	96 (50.0)	102(72.9)	198(59.6)
Intrauterine Device (IUD)	99 (51.6)	116(82.9)	215(64.8)
Contraceptive implant	106 (55.2)	120(85.7)	226(68.1)
Emergency Contraception pill	127 (66.1)	128(91.4)	255(76.8)
Condom	136 (70.8)	130(92.9)	266(80.1)
Withdraw before ejaculation	91 (47.4)	97(69.3)	188(56.6)
Periodic Abstinence /Rhythm	66 (34.4)	70 (50.0)	136(41.0)
Safe period	95(49.5)	88(62.9)	183(55.1)
Knowledge of the methods			
Woman can take a pill every day.	59(30.7)	81(57.9)	140(42.2)

Knowledge of contraception*	Male n=192 (%)	Female n=140 (%)	Overall n= 332 (%)
Do you know the place or person can obtained pills?	91(47.7)	119(85.0)	210(63.3)
Woman can have an Injection every 2 or every 3 months	54 (28.1)	62(44.3)	116(35.9)
Do you know the place or person can obtained long acting contraceptive injection?	46(24.0)	49(35.0)	95(28.6)
Do you know the place or person can get Intrauterine device (IUD)?	61(31.8)	56(40.0)	117(35.2)
Do you know the place or person can get contraceptive implants?	49(25.5)	73(52.1)	122(36.7)
A man can put a condom on his penis before intercourse.	100(52.1)	107(76.4)	207(62.3)
Do you know the place or person can obtained condom?	118(61.5)	98(70.0)	216(65.1)
Emergency contraceptive pill, woman can take pills soon after intercourse.	92(47.9)	110(78.6)	202(60.8)
Do you know the place or person can obtained emergency pills?	72(37.5)	109(77.9)	181(54.5)
A man can withdraw /pull out of a woman before climax or ejaculation to prevent pregnancy.	65(33.9)	60(42.9)	125(37.7)
A couple can avoid sex on days when pregnancy is most likely to occur.	72(37.5)	72(51.4)	144(43.4)

*participants with correct answers only

Level of knowledge of contraception

Among 332 respondents 153 (46.1%) had low level of contraception. The low level of knowledge was defined when the score was less than 12.6 out of total 21 scores, moderate from 12.6-16.8 scores and high level for more than 16.9 scores. The table showed that, male (60.4%) had poorer knowledge than female (26.4%)/. And for high level of knowledge female (23.6%) had higher score than male (8.9%).

Table 8 Level of knowledge of contraception among students

Level knowledge of Contraception	Male (n=192) (%)	Female (n=140 (%)	Overall n=335 (%)
Poor level of knowledge (<60%) (<.12.6 score)	116(60.4)	37(26.4)	153(46.1)
Moderate level of knowledge (60-80%) (12.6-16.8 score)	45(23.4)	39(27.9)	84(25.3)
High level of knowledge (>80%) (>16.9 score	17(8.9)	45(32.1)	62(18.7)
Missing data	14(7.3)	19(23.6)	33(9.9)

4.4 Knowledge of reproductive health and reproductive health rights

Table 9 showed the 6 indicators of knowledge of reproductive and reproductive health rights. The indicators also showed that female had higher knowledge than male for all indicators. About 57.1% of female and 43.1% of male answered that woman can get pregnant on the very first time that she has sexual intercourse, Followed with 42.1% of female and 28.1% of male understood that female will most likely get pregnant when they have sexual intercourse half way between periods.

For the reproductive rights less than fifty percent, 43.6% and 46.3% of female knew that they can get IUD and contraceptive implant free of charge. But for male only 28.1% and 31.3% knew that government provided IUD and contraceptive implant free of charge.

Table 9 Correct knowledge of reproductive health and reproductive rights among students

*Knowledge of reproductive health and reproductive health right	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
A woman can get pregnant on the very first time that she has sexual intercourse.	81(42.2)	80 (57.1)	161(48.5)
A woman is most likely to get pregnant if she has sexual intercourse halfway between her periods.	54(28.1)	59(42.1)	113(34.0)
Do you know there is project from Thai government for free of charge of IUD for teenagers?	60(31.3)	61(43.6)	121(36.4)
Do you know there is project from Thai government for free of charge of contraceptive implant for teenagers?	47(24.5)	65(46.4)	112(33.7)
Do you know that if the student gets pregnant they can continues their study till graduate?	58(30.2)	58(41.4)	116(34.9)
Do you know that, if anyone refuse to assist endangered teenager will be fine of 10,000 baht and/or imposed a maximum jail term of one month?	48(25.0)	24(17.1)	72 (21.7)

* participants with correct answers only

Level of knowledge of reproductive health and reproductive rights among students

Table 10 showed that out of 332 respondents 213 (64.2%) had low level of knowledge female had lower knowledge more than male. The table also showed a big gap between the level of knowledge of female respondents between poor (70.0%) and high (12.1%) level of knowledge. The level of knowledge was defined low level when score was less than 3.5 scores, moderate between 3.6- 4.8 scores and high level more than 4.9 scores.as shown below.

Table 10 Level of knowledge of reproductive health and reproductive rights among students

Level knowledge of reproductive health and rights	Male n=192(%)	Female n=140(%)	Overall n=332 (%)
Low level of knowledge (<60 %)	115(59.9)	98(70.0)	213(64.2)
Moderate level of knowledge (60-80%)	56(29.1)	25(17.9)	81(24.4)
High level of knowledge (>80%)	17(8.9)	17(12.1)	34(10.2)
Missing data	4(2.1)	0	4(1.2)

4.5 Attitude toward reproductive Health

Table 11 showed 4 indicators of attitude towards reproductive health from vocational students. The result of attitude showed that 42.1% of female and 35.9% of male strongly agree that girls should remain a virgin and only 7% of female and 12.5% strongly disagree. In term of rights for boys and girls to have sexual contacts (kiss, hug and touch each other 47.9% of female disagreed and 10% agreed , and about 19.8% of male agreed and 31.8% disagreed. The data explained that 22.9% of male and 10.0% of female strongly believed that boys and girls can have sexual intercourse if they love each other. The data also indicated the different result of answer for nott ready to have sex in female and male. There was 41.4% of female , 25.0% of male that responded not ready to have sex at their age.

Table 11 Attitude towards reproductive health

Attitude toward reproductive health	Male (n= 192)					female(n= 140)			
	Strongly agree	Agree	disagree	strongly disagree	Missing data	Strongly agree	Agree	disagree	strongly disagree
I believed that girls should remain virgin.	69 (35.9)	75 (39.1)	21 (10.9)	24 (12.5)	3 (1.6)	59 (42.1)	70 (50.0)	4 (2.9)	7 (5.0)
I believed it's all right for boys and girls to kiss, hug and touch each other.	38 (19.8)	69 (35.9)	61 (31.8)	23 (12.0)	1 (0.5)	10 (7.1)	39 (27.9)	67 (47.9)	24 (17.1)
I believed it's all right for unmarried boys and girls to have sexual intercourse if they love each other.	44 (22.9)	68 (35.4)	54 (28.1)	25 (13.0)	1 (0.5)	14 (10.0)	39 (27.9)	67 (47.9)	20 (14.3)
I don't feel ready to have sex of my age.	48 (25.0)	74 (38.5)	36 (18.8)	33 (17.2)	1 (0.5)	58 (41.4)	53 (37.9)	17 (12.1)	12 (8.6)

Level of Attitude towards reproductive health

Among 332 respondents, 228 (68.7%) of vocational students had neutral attitude towards reproductive health. There was no significant difference of attitude between male and female. The mean score of attitude was 13.42 and standard deviation was 2.11. The score of attitude was defined as negative when the score was less than 11.32 or equal to 13.42-2.11 (11.31), and was positive when it was greater than or equal to (13.42+2.11(15.53) as shown in table 12.

Table 12 Level of attitude towards reproductive health

Level of Attitude reproductive	Male n = 192	female n=140	Overall n=332
Negative attitude : (≤mean-2 Standard deviation) (≤8.65 score)	21 (10.9)	17 (12.1)	38(11.4)
Neutral attitude: (mean+ 1standard)deviation(8.66-12.60)	130(67.7)	98 (70.0)	228(68.7)
Positive attitude(≥ mean+2 standard deviation) (≥ 12.61	38 (19.8)	25 (17.9)	63(19.0)
Missing data	3(1.6)	0(0.0)	3(0.9)

4.1.6 General risk behavior

Table 13 showed no significant different of drinking alcohol, 42.7% of male and 40.7% of female, and 33.3% of male and 33.6% of female had more than 3 glasses at one times.

In terms of smoking male (33.3%) had higher than female (12.9%), and 24.0% of male and 9.3% of female smoke less than one pack per week.

Based on the table, male (21.9%) had higher percent of using amphetamine and methamphetamine (Yaa Ba and Yaa Ice) than female (9.3%). The students gave most answer to yes for reasons of taking drugs, listed as stay awake to study, for fun/to party, and got pressure by friends. The table also showed responses of vocational student taking other drugs, 40% of male and 6.4% of female answered yes to this question.

Table 13 General risk behaviors among students

Behavior	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Alcohol drinking;			
Except the social event, did you ever drink alcohol in the last 30 days?			
Yes	82(42.7)	57(40.7)	139(41.9)
No	97(50.5)	79(56.4)	176(53.0)
Missing data	13(6.8)	4(2.9)	17(5.1)

Behavior	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
If yes , did you ever have three or more alcoholic drinks at one time?			
Yes	64 (33.3)	47(33.6)	111(33.4)
No	18 (9.4)	10(7.1)	28(8.4)
Missing data (including none drinker)	110 (57.3)	83(59.3)	193(58.1)
Smoking ;			
During the last 30 days, did you smoke?			
Yes	67(34.9)	18(12.9)	85(25.6)
No	118(61.5)	116(82.9)	234(70.5)
Missing data	7(3.6)	6(4.3)	13(3.9)
If yes, did you smoke less than one pack per week?			
Yes	46 (24.0)	13(9.3)	59(17.8)
No	21 (10.9)	5(3.6)	26(7.8)
Missing data (including none smoker)	125(65.1)	122(87.1)	247(74.4)
Drug use: Have you ever taken amphetamines or Methamphetamines (Yaa Ba or Yaa Ice)?			
Yes	42 (21.9)	8(5.7)	50(15.1)
No	138(71.9)	120 (85.7)	258(77.7)
Missing data	12(6.2)	12(8.6)	24(7.2)
If yes , what were your reasons for taking methamphetamines (Yaa ba or Yaa Ice)?			
• Stay awake to study			
yes	35(18.2)	7 (5.0)	42 (12.7)
No	7 (3.6)	0 (0.0)	7(2.1)
Missing data (including no drug user)	150(78.1)	133(95.0)	283(85.2)
• To party/for fun			
Yes	28(14.6)	7 (100)	35(10.5)
No	14(7.3)	0 (0.0)	14(4.3)

Behavior	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Missing data (including no drug user)	150(78.1)	133(95.0)	283(85.2)
• Pressed by friend(s)			
Yes	32(16.7)	6(4.3)	38(11.4)
No	10(5.2)	1(0.7)	11(3.4)
Missing data (including no drug user)	150(78.1)	133(95.0)	283(85.2)
Have you ever taken other drugs?			
Yes	40(20.8)	9(6.4)	49(14.8)
No	142(74.0)	126(90.0)	268(80.7)
Missing data	10 (5.2)	5(3.6)	15(4.5)

Level of general risk behavior among students

The table 14 showed that there were two groups of vocational students. Group 1, no risk was defined as 0 score and group 2, having risk. The two levels of risk categorized by using mean score was 2.15. The score of risk behavior was defined as low risk when the score was less than to 2.15(2.14), and high risk was defined when score was equal or higher than 2.15. Out of 332 respondents , 132 (39.8%) was group 1 and 154 (46.8%) was group 2. Group1, female (46.4%) has higher percentage of no risk than male (34.9%). For group 2, based on table 30.7% of female, and 18.7% of male had low risk. In additional 32.3% of male and 9.3% of female had high risk.

Table 14 Level of general risk behaviors among students

Level of risk	Male n= 192 (%)	female n=140 (%)	Overall (n=332) (%)
Group 1; No risk	67(34.9)	65(46.4)	132(39.8)
Group 2 : Low risk (<mean score)	36(18.7)	43(30.7)	79(23.8)
Group 3 : High risk(≥ mean score)	62(32.3)	13(9.3)	75(22.6)
Missing data	27(14.1)	19(13.6)	46(13.8)

4.1.7 Sexual harassment

Table 15 showed that out of 332 of vocational students 256 (77.8%) had no experience of sexual harassment. The data explained that 28.6% of male and 11.4% of female had experience of sexual harassment. .

Table 15 Sexual harassment among students

Sexual harassment	Male (n=192) (%)	Female (n=140) (%)	Overall (n=332) (%)
Have you ever had sexual harassment?(sexual harassment means force, physical or mental, to have sexual contact or intercourse against your will)			
Yes	55(28.6)	16 (11.4)	71(21.4)
No	134(69.8)	122(87.2)	256(77.1)
Missing data	3(1.6)	2(1.4)	5(1.5)

4.1.7 Communication skills

According to table 16, the table explained talking concerning sex to parents was more significant in both male (48.4%) and female (55.7%) vocational students. Followed with 48.6% of female and 32.3% of male had good communication with peers. Furthermore, in case of talking concerning sex 41.4% of female and 27.1% of male had communicated with medical professional. Based on data 40.0% of female and 21.9% of male had more to communicate to extended family, also this description also showed an area of sibling, internet, and no one.

Regarding vocational students who have partner, 48.9% of male and 36.45% of female had good communication for asking sexual relations. In terms of condom use, 39.6% of male and 31.4% of female had asked their partner for using condom before having sexual intercourse. Regarding contraceptive use, 39.3% of female and 39.0% of male was able to communicate with their partner. The data explained that 44.3% of male and 35.7% of female could refuse to have sexual intercourse with their partners. In case of having opposite feeling from parents, 33.3% of male and 25.7% of female could state their mind. According to testing for HIV and STIs, 32.3% of male and 27.1% of female was able to communicate with their partners.

Table 16 Communication skills among students

*Communication skills for all students	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
If you have a question concerning sex, who you would like to ask? (Multiple answers)			
Your partner	65(33.9)	34(24.3)	102(30.4)
Peer	62(32.3)	68(48.6)	133(39.7)
Sibling	40(20.8)	26(18.6)	70(20.9)
Parent/Guarding	93(48.4)	78(55.7)	174(51.9)
Extended family	42(21.9)	56(40.0)	101(30.1)
Medical professional	52(27.1)	58(41.4)	113(33.7)
Internet	46(24.0)	53(37.9)	100(29.9)
No one	12(6.3)	5(3.6)	17(5.1)
**** For participants with yes answers only***			
Communication skills for student who have partner(s) partner only			
Generally, I am able to ask for what I want in a sexual relationship?			
Yes	94(48.9)	51(36.4)	145(43.7)
No	51(26.6)	33(23.6)	84(25.3)
Missing data(including participants have no partner)	47(24.5)	56(40.0)	103(31.0)
Generally, I do not hesitate to ask my sex partner to use condom before sexual intercourse.			
Yes	76(39.6)	44(31.4)	120(36.2)
No	68(35.4)	39(27.9)	107(32.2)
Missing data(including participants have no partner)	48(25.0)	57(40.7)	105(31.6)

*Communication skills for all students	Male n=192 (%)	Female n=140 (%)	Overall n=332 (%)
Generally, I have no fear to discuss with my partner regarding contraceptive utilization			
Yes	75(39.0)	55(39.3)	130(39.1)
No	69(36.0)	29 (20.7)	98(29.5)
Missing data(including participants have no partner)	48(25.0)	56(40.0)	104(31.3)
I am confident to refuse to have sexual intercourse with my partner.			
Yes	85(44.3)	50(35.7)	135(40.7)
No	60(31.2)	34(24.3)	94(28.3)
Missing data(including participants have no partner)	47(24.5)	56(40.0)	103(31.0)
Generally, when my parent/s need and feelings are in opposite to my own, I always state mine?			
Yes	64(33.3)	36(25.7)	100(31.1)
No	81(42.2)	46(32.9)	127(38.3)
Missing data(including participants have no partner)	47(24.5)	5841.4)	105(31.6)
Have you asked your most resent sexual partner(s) if they have been tested for HIV or STIs?			
Yes	62(32.3)	38(27.1)	100(31.1)
No	81(42.2)	46(32.9)	127(38.3)
Missing data(including participants have no partner)	49(25.5)	56(40.0)	105(31.6)

Level of communication

Regarding the level of communication of vocational students who has no partner, two levels were categorized by using mean score was 2.16 and standards deviation was 1.94. The score of communication was defined as poor communication

when the score was less than to 2.15, and good communication was defined when score was equal or higher than 2.16. Table 17 showed that out of 332 vocational students 206 (62.0%) had poor communication.

Table 17 Level of communication skills among student who HAVE NO partner

Level of communication No sex partner	Male n=192 (%)	female n=140 (%)	Overall n=332 (%)
Poor communication : < mean	136(70.8)	70(50.0)	206(62.0)
Good communication: ≥ mean	53(27.6)	69(49.3)	122(36.8)
Missing data	3(1.6)	1(0.7)	4(1.2)

Communication skills among students who have partner(s)

According to vocational students who has partner, two levels were categorized by using mean score was 5.88 and standards deviation was 2.78. The score of communication was defined as poor communication when the score was less than to 2.15, and good communication was defined when score was equal or higher than 2.16. Table 18 showed that out of 332 vocational students 122 (36.7%) had good communication. The table revealed that 40.6% of male and 31.4% of female had good communication.

Table 18 Level of communication skills among students who HAVE partner(s)

Level of communication	Male n= 192 (%)	female n=140 (%)	Overall (n=332) (%)
Poor communication : (< mean)	62 (32.3)	38(27.2)	100(30.1)
Good communication: (≥ mean)	78(40.6)	44(31.4)	122 (36.7)
Missing data	52(27.1)	58(41.4)	110(33.2)

2. Perception towards disease and sexual behavior

4.6 Perceived susceptibility of HIV/AIDS and Pregnancy

Table 19 showed perceived susceptibility of vocational students of HIV/AIDS that 73.6% of female and 58.3% of male students had no chance to get infected by HIV/AIDs. In case of having heterosexual partner, 71.4 % of female and 57.8% of male answered that they had no chance to expose to HIV/AIDS infection. According to having only one partner, 68.6% of female and 53.1% of male revealed that they have no chance to get HIV/AIDS infection.

Regarding perceived susceptibility of pregnancy, 11.5% of male and 3.6% of female answered that there was a chance for getting pregnant.

Table 19 Perceived susceptibility of HIV/AIDS and Pregnancy among students

Perceived Susceptibility	Male (n= 192) (%)					female(n= 140) (%)			
	Very high	high	low	none	Missing data	Very high	high	low	none
The chances that I can get HIV/ AIDS are	25 (13.0)	35 (18.2)	18 (9.4)	112 (58.3)	2 (1.1)	9 (6.4)	11 (7.9)	17 (12.1)	103 (73.6)
The chances I can be exposed to HIV/AIDS infection if my sex partner is heterosexual are	23 (12.0)	26 (13.5)	30 (15.6)	111 (57.8)	2 (1.1)	8 (5.7)	18 (12.9)	14 (10.0)	100 (71.4)
The chances that I can get HIV/AIDS even if I am only having sex with one partner are	20 (10.4)	23 (12.0)	45 (23.4)	102 (53.1)	2 (1.1)	5 (3.6)	10 (7.1)	29 (20.7)	96 (68.6)
The chances of myself or my partner getting pregnant are	22 (11.5)	29 (15.1)	35 (18.2)	104 (54.2)	2 (1.0)	5 3.6)	21 (15.0)	28 (20.0)	86 (61.4)

Level of perceived susceptibility of HIV/AIDS and pregnancy

Regarding perceived susceptibility of male, the mean score of attitude was 7.28 and standard deviation was 3.90. The score of attitude was defined as low perception when the score was less than 7.28 (7.27) score and as high perceived when it was greater than or equal to 7.28. In terms of perceived susceptibility of female, the mean score of attitude was 6.06 and standard deviation was 2.9. The score of attitude was defined as low perception when the score was less than 6.06 (6.05), and as high perception when it was greater than or equal to 6.06 score. Overall attitude of both

male and female, the mean score of attitude was 6.77 and standard deviation was 3.57. The score of perceived susceptibility was defined as low when the score was less than 6.82 (6.81), and as high when it was greater than or equal to 6.82.

Table 20 showed that out of 332 vocational students 215 (64.8%) had low perceived susceptibility of HIV/AIDS and pregnancy. Furthermore, 72.1% of female and 59.4% of male has low level of perceived level of susceptibility.

Table 20 Level of perceived susceptibility of HIV/AIDS and Pregnancy among students

Level of perceived susceptibility	Male (n=192) (%)	female (n=140) (%)	Overall (n=332) (%)
Low level ; (< mean score)	114(59.4)	101(72.1)	215(64.8)
High level : (≥ mean score)	76(39.6)	39(27.9)	115(34.6)
missing data	2(1.0)	0(0.0)	2(0.6)

4.7 Perceived severity of HIV/AIDS, STIs and Pregnancy

Table 21 showed perceived severity of vocational students of HIV/AIDS that and 40% of male and 37.9% of female students agreed that AIDS causes death. For having other terminal illness than AIDS, 39.5% of male agreed and 33.6% of female strongly agreed. In term of having AIDS 37.5% of male agreed and 44.3% of female agreed that they will have no more friends. Only 13.5% of male and 12.9% of female did not agree. According to reproductive health, 38.0% of male and 44.7% of female agreed that they will have problems with fertility. Regarding general health 54.3% of female and 36.5% of male believed that they will have health problem if they become pregnant.

Table 21 Perceived severity of HIV/AIDS, STIs and Pregnancy among students

Perceived Severity	Male (n= 192) (%)				female(n= 140) (%)			
	Strongly agree	Agree	disagree	strongly disagree	Strongly agree	Agree	disagree	strongly disagree
AIDS causes death	48(25.0)	76(40.1)	47(24.5)	20(10.4)	24(17.1)	53(37.9)	45(32.1)	18 (12.9)
I would rather have any other terminal illness than AIDS.	58 (30.2)	76 (39.5)	35 (18.8)	22 (11.5)	47 (33.6)	43 (30.7)	23 (16.4)	27 (19.3)
If I have AIDS, I will have no more friends and people will be afraid of me .	48 (25.5)	72 (37.5)	44 (23.4)	26 (13.5)	31 (22.1)	62 (44.3)	29 (20.7)	18 (12.9)
If I have STIs, I will have a problem with my fertility.	46 (24.0)	73 (38.0)	52 (27.1)	21 (10.9)	33 (23.6)	66 (44.7)	23 (16.4)	18 (12.9)
If I become pregnant, I will have severe health problem.	44 (22.9)	70 (36.5)	48 (25.0)	30 (15.6)	33 (23.6)	76 (54.3)	19 (13.6)	12 (8.6)

Level of perceived severity of HIV/AIDS, STIs, and Pregnancy

Regarding the level of perceived severity of male, the levels were categorized by using mean score. Mean was 12.59 and 1.52 for standard deviation, the score for perceived severity was defined as low perceived when the score was less than 12.59 (12.58) score and as high perceived when it was greater than or equal to 12.59. For female, the mean score was 12.79 and standard deviation was 1.57. The score of perceived severity was defined as low level when the score was less than 12.79(12.78), and as high level when it was greater than or equal to 12.79 score. The overall level of perceived severity, mean score of perceived severity was 12.67 and standard deviation was 1.54. The score of perceived susceptibility was defined as low when the score was less than 12.67(12.66), and as high when it was greater than or equal to 12.67.

Table 22 showed that out of 332 students 183 (55.2%) had high perception of HIV/AIDS and STIs and about 149 (44.8%) had low perception. There was no significant difference between male and female.

Table 22 level of perceived severity of HIV/AIDS, STIs, and Pregnancy among students

Level of perceived severity	Male = 192 (%)	female (n=140) (%)	Overall n=332 (%)
Low perceived severity: (< mean score)	87(45.3)	62 (44.3)	149(44.8)
High perceived severity score: (≥ mean score)	105(54.7)	78(55.7)	183(55.2)

4.8 Perceived Benefits of condom used, contraception used, and only one partner

According to perceived benefits of student reveals that 49.3% of female and 41.6% of male strongly agreed that using condom reduced the chance of getting HIV, STIs including preventing pregnancy. In term of having sexual intercourse with only one partner, 38.5% of male and 45.7% of female agreed that they have less chances to contract with HIV, STIs, only 1% of female and 11.0 % of male strongly disagreed.

According to using contraception for preventing pregnancy, 50.7% of female and 40.6% of male agreed for this statement as shown in table 23 below.

Table 23 perceived benefits of condom used, contraception used , and only one partner among students

Perceived benefits	Male n= 192				female(n= 140)			
	Strongly agree	**Agree**	**disagree**	**strongly disagree**	**Strongly agree**	**Agree**	**disagree**	strongly disagree
Using condom reduce the chances of Contracting HIV/AIDS, STIs , and prevent pregnancy.	79 (41.6)	78 (40.6)	23 (12.0)	12 (6.3)	69 (49.3)	5 (39.3)	10 (7.1)	6 (4.3)
I feel that the chances of contracting AIDS/ STIs can be reduced by having sex with only one partner	62 (32.3)	74 (38.5)	35 (18.2)	21 (11.0)	43 (30.7)	64 (45.7)	22 (15.7)	1 (7.9)
Using contraception can prevent unwanted pregnancy.	49 (25.5)	78 (40.6)	46 (24.0)	19 (9.9)	45 (32.1)	71 (50.7)	19 (13.6)	5 (3.6)

Level of perceived benefits of condom used, contraceptive used, and one partner only

Regarding the level of perceived benefits of male, the levels were categorize by using mean score. Mean was 8.9 and 2.40 for standard deviation. The score perceived benefits was defined as low perceived when the score was less than 8.9 (8.8) score and as high perceived benefits when it was greater than or equal to 8.9. For female, the mean score was 9.44 and standard deviation was 2.02. The score was defined as low level when the score was less than 9.44(9.43), and as high level when it was greater than or equal to 9.44 score. Overall level of perceived benefits, mean score of perceived benefits was 9.99 and standard deviation was 2.26. The score of perceived benefits was defined as low when the score was less than 9.99 (9.98), and as high level when it was greater than or equal to 9.99.

Table 4.9 showed that out of 332 students 184(55.4%) had high perceived benefits of using condom and contraception. Out of 192 male students 118 (61.5%) had high level and, above half of female students (52.9%) had low level.

Table 24 Level of perceived benefits of condom used, contraceptive used, and one partner only among students

Level of perceived Benefits	**Male n= 190 (%)**	**female n=140 (%)**	**Overall n=332 (%)**
Low perceived Benefits (< mean score)	74 (38.5)	74 (52.9)	148(44.6)
High perceived Benefits (≥ mean score)	118(61.5)	66 (47.1)	184(55.4)

4.9 Perceived Barrier of condom and contraceptive used

The table 25 showed that among vocational students 48.6% of female and 34.4% disagreed that using condom seem like to insult their partners. However, 15.6 % of male and 10.7% of female strongly agreed for this statement. In term of buying condom make them feel embarrassing 44.3% of female disagree and 31.3% of male disagreed. According to statement of using condom will prevent them to enjoy sexual activities, 31.8% of male disagreed and 21.8 % of male agreed. However, 45.7% of female disagree or this statement.

Regarding barrier for using contraception 31.3% of male and 22.1% of female agreed that they did not know how to use. However , 42.1% of female disagreed while 31.8% of male disagreed.

Table 25 Perceived barriers of condom and contraceptive used among students

Perceived Barrier	Male n=192 (%)				Female n=140 (%)			
	Strongly agree	Agree	disagree	strongly disagree	Strongly agree	Agree	disagree	strongly disagree
Using a condom seems like an insult to my partner.	30 (15.6)	49 (25.5)	66 (34.4)	47 (24.5)	15 (10.7)	18 (12.9)	68 (48.6)	39 (27.9)
It is embarrassing (to me) to buy a condom or contraception.	29 (15.1)	53 (27.6)	60 (31.3)	50 (26.0)	13 (9.3)	26 (18.6)	62 (44.3)	39 (27.9)
I do not enjoy (or think I might not enjoy) sex when using a condom	42 (21.8)	61 (31.8)	61 (31.8)	28 (14.6)	20 (14.3	21 (15.0)	64 (45.7)	35 (25.0)
I don't know how to use contraception.	40 (20.8)	60 (31.3)	61 (31.8)	31 (16.1)	20 (14.3)	31 (22.1)	59 (42.1)	30 (21.4)

Level of perceived barrier of condom and contraceptive used

Regarding level of perceived barrier of male ,the level was categorized by using mean score. The mean score was 10.17 and standard deviation was 2.96. The level was defined as low perception when the score was less than 10.17 (10.16) score and as high level when it was greater than or equal to 10.17. For female, the mean score was 11.36 and standard deviation was 2.99. The score of perceived barrier was defined as low level when the score was less than 11.36 (11.35), and as high level when it was greater than or equal to 10.17. According to overall respondents mean score was 10.68 and standard deviation was 3.03. The score of perceived barrier was defined as low level when the score was less than 10.68 (10.67) score , and as high level when it was greater than or equal to 10.68.

Table 26 showed that 55.2% of male and 44.3% of female had low level of perceived barrier. The data also explained that 55.7% of female and 44.7% had high level of barriers.

Table 26 Level of perceived barriers of condom and contraceptive used among students

Level of perceived Barriers	Male n = 192 (%)	female (n=140) (%)	Overall (n=332) (%)
Low perceived barriers (< mean score)	106(55.2)	62(44.3)	168(49.7)
High perceived barriers (≥ mean score)	86(44.7)	78(55.7)	164 (49.39)

3. Self- efficacy to avoid sex and condom used

Table 27 revealed that 58.6% of female students strongly agreed that they had confidence to avoid sex if it was against their will and 34.4% of male students agreed on that statement. In terms of confidence to use condom every time when having sexual intercourse, 47.9 % of female strong agreed and 41.6% of male also strong agreed for this question. Around 13.6% of female and 10.4% of male strong disagreed that they have confidence to avoid sex and will use condom every time when having sex.

Table 27 Self-efficacy of avoid sex and condom used among students

Self-efficacy	Male n=192 (%)				Female n=140 (%)			
	Yes	Probably yes	Probably no	No	Yes	Probably yes	Probably no	No
I am confident to avoid sex anytime I did not want it?	66 (34.4)	68 (35.4)	38 (19.8)	20 (10.4)	82 (58.6)	23 (16.4)	16 (11.4)	19 (13.6)
I am confident to use condom every time I had sex..	78 (41.6)	57 (29.7)	34 (17.7)	21 (11.0)	67 (47.9)	28 (20.0)	26 (18.6)	19 (13.6)

Level of self –efficacy of avoid sex and condom used

According to the level of self- efficacy of male, the level was categorized by using mean score. The mean score was 5.94 and standard deviation was 1.83. The level was defined as low level when the score was less than 5.94 (5.93) score and as high level when it was greater than or equal to 5.94. For female, the mean score was 6.22 and standard deviation was 2.06. The score of self efficacy was defined as low level when the score was less than 6.22 (6.21), and as high level when it was greater than or equal

to 6.22. For overall students mean score was 6.06 and standard deviation was 1.93. The low level was defined when the score was less than 6.06 (6.05) score, and as high level when it was greater than or equal to 6.06.

Table 4.25 showed that out of 332 students 206 (62.0%) had high self-efficacy and male (67.7%) had higher self-efficacy than female (54.3%)

Table 28 Level of self-efficacy of avoid sex and condom used among students

Level of self- efficacy	Male n= 192 (%)	female (n=140) (%)	Overall n=332 (%)
Low perceived self-efficacy (< mean score)	62(32.3)	64(45.7)	126(38.0)
High perceived self- efficacy (≥ mean score)	130(67.7)	76(54.3)	206(62.0)

4. Cues to action of internet, health education, symptoms of STIs, peer influence, family members, and Thai tradition

Table 29 revealed that male had used internet for sexual behaviors than female. There was 57.3% of male and 45.7% of female that used internet for getting information about sex activities. In terms of using for scientific information, 43.3% of male and 35.0% of female had often used internet. Regarding chatting about sex via internet, 39.6% of male and only 29.3% of female used internet on this purpose. According to viewing pornography webpage male (43.2%) had double used than female (23.6%).

For health education, 69.3% of female and 60.4% of male were received session of safe sex behaviors which encourage them to practice safe sex behaviors. Furthermore 49.3% of female and 40.1% of male students practice safe sex when their friend experienced of STIs symptoms.

52.9% of female and 49.5% of male received advice from friend regarding they should have only one steady partner made them practice safe sex behaviors. For discussing about sex related issue with parent and family, 50% of male and 42.2% of female responded yes to this question, furthermore for male(44.8%) discussed with brother/sister more than female(32.9%). Only 25% of female talked to their aunt and uncle. The reaction of talking about sex related issues was 51.4% of female and 47.9% was very strict.

In terms of Thai traditional it showed that 52.6% of male and 40.0% of female agreed the boys had rights to have sex before marriage if they protected themselves well by using condom.

There was a question asked only for girls about Thai traditional 63.6% of female agreed that their parent will lose face if they get pregnant before married

Table 29 Cues to actions: internet, health education, symptoms of STIs, peer influence, family members, Thai traditional among students

Cues to action	**Male (n=192) (%)**	**Female =140 (%)**	**Overall (n=332) (%)**
Internet ; Do you use internet for getting information about sex activities?			
Yes	110(57.3)	64(45.7)	174(52.4)
No	81(42.2)	71(50.7)	152(45.8)
missing data	1(0.5)	5(3.6)	6(1.8)
If yes, do you use internet for scientific-information?			
Yes	83(43.3)	49 (35.0)	132(39.8)
No	44(22.9)	15(10.7)	59(17.8)
missing data	81(42.2)	76(54.3)	157(47.2)
If yes, do you use internet for chatting about sex?			
Yes	76(39.6)	41 (29.3)	117(35.2)
No	35(18.2)	23(16.4)	58(17.5)
missing data	81(42.2)	76(54.3)	157(47.3)
If yes, do you use internet for viewing pornographic pages?			
Yes	83(43.2)	33(23.6)	118(35.2)
No	28(14.6)	31(22.1)	57(17.2)
missing data	81(42.2)	76(54.3)	157(47.3)
Health education; Have you received health education session about safe sex which make you practice safes sex?(define as any of the following abstinence, condom use , and contraception)			
Yes	116 (60.4)	97(69.3)	213(64.2)
No	74(38.5)	41(29.3)	115(34.6)
missing data	2(1.1)	2(1.4)	4(1.2)

Cues to action	**Male (n=192) (%)**	**Female =140 (%)**	**Overall (n=332) (%)**
STIs Symptoms :Has your friend have a symptom of STIs which make you practice safer sex? (defined as any of the following abstinence, condom use , contraception.)			
Yes	77(40.1)	69(49.3)	146(44.0)
No	112(58.3)	70(50.0)	182(54.8)
missing data	3(1.6)	1(0.7)	4(1.2)
Peer influence; Has your friend told you that you should have only one boy/girl-friend which make me practice safe sex? (defined as of the following abstinence, condom use and contraception.)			
Yes	95(49.5)	74(52.9)	169(51.0)
No	95(49.5)	65(46.4)	160 (48.1)
missing data	2(1.0)	1(0.7)	3(0.9)
Family members: Have you ever discussed about sex related issues with your parent or your family?			
Yes	96(50.0)	59(42.2)	155(46.7)
No	93(48.4)	80(57.1)	173(52.1)
missing data	3(1.6)	1(0.7)	4(1.2)
Have you ever discussed about sex related issues with your brother or sister?			
Yes	86(44.8)	46(32.9)	132(39.8)
No	104(54.2)	93(66.4)	197(59.3)
missing data	2(1.0)	1(0.7)	3(0.9)
Have you ever discussed about sex related issues with your aunt or uncle?			
Yes	74(38.5)	35(25.0)	109(32.8)
No	114(59.4)	103(73.6)	217(65.4)
missing data	4(2.1)	2(1.4)	6(1.8)
If yes, what is their reaction about this issue? Very strict			
Yes	92(47.9)	72(51.4)	164(49.4)
No	95(19.5)	59(42.1)	154(46.4)

Cues to action	Male (n=192) (%)	Female =140 (%)	Overall (n=332) (%)
missing data	5(2.6)	9(6.5)	14(4.2)
Thai traditional: I agree with Thai tradition to avoid sex before married.			
Yes	100(52.1)	93(66.4)	193(58.1)
No	89(46.4)	46(32.9)	135(40.7)
missing data	3(1.5)	1(0.7)	4(1.2)
I agree with Thai tradition that allow boys to have sex before married if they use condom.			
Yes	101 (52.6)	56(40.0)	157(47.3)
No	88(45.8)	83(59.3)	171(51.5)
missing data	3(1.6)	1(0.7)	4(1.2)
I practice safe sex because my family will lose face if I get pregnant before marriage. (only ***for girl)***			
Yes	0(0.0)	89(63.6)	89(26.8)
No	0(0.0)	46(32.9)	146(44.0)
missing data (male participants only)	192	5(3.6)	197(59.2)

Level of cues to action of internet, health education, symptoms of STIs, peer influence, family members, and Thai tradition

Table 4.27 revealed level cues to action of male by suing mean score. The mean score was 4.98 and standard deviation was 2.94. The low level was defined when the score was less than 4.98 (4.97) score and as high level was defined when it was greater than or equal to 4.98. Regarding level cues to action of female, the mean score was 5.55 and standard deviation was 2.87. The score was defined as low cues to action when the score was less than 5.55 (5.54) score and as high level when it was greater than or equal to 5.55. According to overall students level cues to action, the mean score was 4.93 and standard deviation was 2.83.The score was defined as low level when the score was less than 4.93 (4.92) score, and as high level when it was greater than or equal to 4.93.

Out of 332 vocational students 172 (51.8%) had high level of cues to action and male (53.6%) had higher level than female (49.3%).

Table 30 Level cues to action; internet, health education, symptoms of STIs, peer influence, family members, and Thai traditional

Cues to actions	Male (n= 192) (%)	female (n=140) (%)	Overall (n=332) (%)
Low (< mean score)	77(40.1)	52(37.1))	129 (38.9)
High (≥ mean score)	103(53.6)	69(49.3)	172(51.8)
Missing data	12(6.3)	19(13.6)	31(9.3)

5. Adolescence safe sex behavior

5.1 Abstinence

Table 31 revealed that out of 332 vocational students 187 (56.0%) students was sexually active, 117 (60.9%) of male and 70 (50%) of female. Therefore, 145(44%) out of total population was abstinence, 70 (50%) of female and 75 (39.1%) of male had no sexual intercourse.

Intended to use condom when having sex of students who have no sexual intercourse, 53.4% of overall, female (23.6%) higher than male(19.8%).

Table 31 Sexual behaviors among students

Sexual behavior	Male (n=192)	Female (n=140)	Overall (n=332)
	%	%	%
Have you ever had sexual intercourse (sexual intercourse means that the penis was penetrated in the vagina or anus)?			
Yes	117(60.9)	70 (50.00)	187 (56.0)
No	75 (39.1)	70(50.00)	145(44.0)
If No, are you intend to use condom when you have sex?			
Yes	38 (19.8)	33(23.6)	71(53.4)
No	29(15.1)	33(23.6)	62(46.6)
Missing data (including abstinence students)	125(66.1)	74(52.8)	199(60.0)

Characteristics of sexual behaviors

As shown in table 32, there was 187 vocational students who had experienced sexual intercourse. The minimum age of first sexual intercourse male was 10 years old and female 13 years old. For male students about 90.6% had sex with women and 7.8% of men had sex with men, 90% of female had sex with male and 8.6% had sex with female.

In terms of when students had their latest sexual intercourse, 40.2% of male and 38.6% of female had their sexual intercourse within 30 days, 29.0% of male and 27.1% of female in the last

60 days. About 27.1% of female and 24.8% of male had their last sexual intercourse more than 6 months.

Regarding using contraception for their first sexual intercourse, female (61.4%) had used contraception more than male (48.7%).

Table 32 Characteristic of sexual behaviors among sexual active students (n=187)

Characteristic	**Male n=117 (%)**	**Female n=70 (%)**	**Overall n=187 (%)**
How old were you when you had sexual intercourse for the first time?			
Minimum age	10 years old	13 years old	
Was it with male or female?			
Male	9 (7.7)	63(90.0)	72 (38.5)
Female	106(90.6)	6(8.6)	112(59.9)
Missing data	2(1.7)	1(1.4)	3(1.6)
When is the last time you have sexual intercourse?			
Within 30 days	47(40.2)	27(38.6)	74(39.6)
In the last 6 months	34(29.0)	19(27.1)	53(28.3)
More than 6 months	29(24.8)	19(27.1)	48(25.7)
Missing data	7(6.0)	5(7.2)	12(6.4)
Did you use contraception during your first sexual intercourse?			
Yes	57(48.7)	43(61.4)	100(53.5)
No	54(46.1)	25(35.7)	79(42.2)
Missing data	6(5.2)	2(2.9)	8(4.3)

5.2 Characteristic of condom used among sexual active students

Table 33 showed that out of 187 respondents with 93 (79.5%) of male and 56 (79.7%) of female used condom for their first sexual intercourse. Only 69% of male and 64.3% used it correctly. The data also revealed that 65% of male and 60% of female used condom for their latest sexual intercourse, and 56.4% of male and 60.0% of female used it effective and correctly

Table 33 Characteristic of conndom used among sexual active student (n=187)

Characteristic	Male n=117 (%)	Female n=70 (%)	Total n=187 (%)
Did you or your sex partner use condom for your first sexual intercourse?			
Yes	93(79.5)	56(79.7)	149 (79.7)
No	24(20.5)	14(20.3)	38 (20.3)
Was the condom used on that occasion?(from the beginning to the end of the sexual intercourse)			
Yes	81(69.2)	45 (64.3)	126(67.4))
No	16(13.7)	11(15.7)	27(14.4)
Missing data	20(17.1)	14(20.0)	34(18.2)
Did you or your sexual partner use condom in your latest sexual intercourse?			
Yes	76 (65.0)	42(60.0)	118(63.1)
No	39(33.3)	23(32.9)	62(33.2)
Missing data	2(1.7)	5(7.1)	7(3.7)
Was the condom used on that occasion?(from the beginning to the end of the sexual intercourse)			
Yes	66 (56.4)	42(60.0)	108(57.8)
No	15(12.8)	6 (8.6)	21(11.2)
Missing data	36(30.8)	22(31.4)	58(31.0)

5.3 Characteristic of contraceptive used among sexual active students

Table 34 revealed that female used contraceptive higher than male. About 71% of male and 81.4% of female used contraception at the first sexual intercourse.

According to contraceptive method, contraceptive pill was the most popular method among students, 67.1% of female and 53.8% of male had used this method. Followed with 67.1% of female and 48.7% of male used withdraw before ejaculation. Then emergency contraceptive pill, female (57.1%) used more than male (43.6%). Based on sex, female used contraception listed as IUD (44.3%),Long Acting Injection (30.0%), contraceptive implant (35.7%) and Periodic abstinence (55.7%) respectively. For male long acting injection was (4.02%), IUD (39.3%), contraceptive implant (34.2%), and periodic abstinence of (47.0%) respectively.

For the latest sexual intercourse, about 68.6% of female and 60.7% of male used contraception. The most popular method for female was to withdraw before ejaculation, followed with oral contraceptive pill and emergency contraceptive pill respectively. For male students oral contraceptive pill (49.6%), emergency contraceptive pill (45.3%), withdraw before ejaculation, IUD , contraceptive implant and injection respectively.

Table 34 Characteristic of contraceptive used among sexual active students (n= 187)

Characteristic	Male n=117 (%)	Female n=70 (%)	Total 187 (%)
Did you or your sexual partner use any contraceptive methods in your first sexual intercourse? (sexual intercourse means that the penis was penetrated in the vagina)			
Yes	83(71.0)	57(81.4)	140(77.9)
No	24(20.5)	11(15.7)	35(18.7)
Missing data	10(8.5)	2(2.9)	12(6.4)
***If yes**, which of the following contraceptive* methods did you or your partner ever use?			
Oral contraceptive pill	63(53.8)	47(67.1)	110(58.8)
Long acting contraceptive injection	47(40.2)	21(30.0)	68(36.4)
Intrauterine device (IUD)	46(39.3)	31(44.3)	77(41.2)
Contraceptive implant	40(34.2)	25(35.7)	65(34.8)
Emergency contraceptive pills	51(43.6)	40(57.1)	91(48.7)

Characteristic	Male n=117 (%)	Female n=70 (%)	Total 187 (%)
Withdraw before ejaculation	57(48.7)	47(67.1)	104(55.6)
Periodic abstinence	55(47.0)	39(55.7)	94(50.3)
Did you or your sexual partner use any contraceptive methods in your latest sexual intercourse? (sexual intercourse means that the penis was penetrated in the vagina)			
Yes	71(60.7)	48(68.6)	119(63.6)
No	42(35.9)	22(31.4)	64(34.2)
Missing data	4(3.4)	0	4(2.2)
***If yes,** which of the following contraceptive methods did you or your partner ever use?			
Oral contraceptive pill	58 (49.6)	38(54.3)	96(51.3)
Long acting contraceptive injection	40(34.1)	17(24.3)	57(30.5)
Intrauterine device (IUD)	48(41.0)	25(35.7)	73(39.0)
Contraceptive implant	42(35.9)	21(30.0)	63(33.7)
Emergency contraceptive pills	53(45.3)	36(51.4)	89(47.6)
Withdraw before ejaculation	52(44.4)	41(58.6)	93(49.7)
Periodic abstinence	50(42.7)	34(48.6)	84(44.9)

Part II: Inferential Statistics

6.1 Bivariate Analysis

Chi square test was used to analyze the association between all independent variables and 3 dependent variables for safe sex behavior. For some cells with the frequency less than 5, Fisher exact test was used. 4 dependent variables are as follows (187 sexually active respondents)

1. Abstinence
2. Condom used for the latest sexual intercourse
3. Contraceptive used for latest sexual intercourse

In this study, age of the respondents and age at the first sex were grouped as three categories. For knowledge, attitude were three levels which were defined. For knowledge, level was set up by using Bloom criteria as <60%, 60-80% and >80%. For attitude and perceptions towards diseases were categories in two level for low and high perception, behaviors categories into low and high risk, cue to action was categorized into low and high the levels, were defined by calculating mean and standard deviation. Only some variables that showed significant associations were described by tables as many independent and dependent variables were included in this study.

6.1.1 Statistically significant association between independent variables and abstinence (no sexual intercourse)

With bivariate analysis was carried out to find association between all independent variables and no sexual intercourse (abstinence), the result revealed that there were eleven factors which was associated with sexual intercourse.

Table 35 described that modifying factors, socio- demographic variable listed as sex became significant with p=0.027, and GPA was significant with p=0.017. For structural variables listed as knowledge of contraception with p=0.026, then knowledge of reproductive health became significant with p=0.007. Furthermore, attitude reproductive health and reproductive rights had strong significance with p=0.000. Regarding the risk behavior it had strong significance with p=0.000, and sexual harassment became significant with p=0.000.

In terms of perception, perceived susceptibility became significant with p=0.010, furthermore, perceived severity had significance with p=0.028. For perceived barriers also became strongly significant with p=0.000. Cues to action had significance with p=0.009 as shown below. In term of perception, perceived susceptibility became significant with p=0.010, furthermore , perceived severity had significant with p=0.028. For perceived barriers also became strong significant with p=0.000. Cues to action had significant with p=0.009 as shown below in Table 35

Table 35 Association between independent variables and abstinence (no sexual intercourse)

Variables	Have you ever had sexual intercourse (sexual intercourse means that the penis was penetrated in the vagina or anus)		χ^2	P-value
	Yes n(%)	No n (%)		
Sex			3.937	0.047*
Male	117(35.2	75(22.6)		
Female	70(21.1)	70(21.1)		
Grade Point average (GPA)			5.668	0.017*
< 2.00	37(11.3)	15(4.6)		
≥ 2.00	146(44.5)	130(39.6)		
Knowledge of Contraception			7.297	0.026*
Poor	85(28.4)	68(22.7)		
Moderate	46(15.4)	38(12.7)		
Good knowledge	46(15.4)	16(5.4)		
Knowledge of Reproductive Health			10.034	0.007**
Poor	130(39.6)	123(37.5)		
Moderate	30(9.1)	11(3.4)		
Good knowledge	24(7.3)	10(3.0)		
Attitude reproductive health			21.963	0.000***
Negative	15(4.6)	37(11.2)		
Neutral	135(41.0)	94(28.6)		
Positive	35(10.6)	13(4.0)		
Risk behavior			28.346	0.000**
No risk	55(19.2)	77(26.9)		
Low risk	50(17.5)	29(10.1)		

Variables	Have you ever had sexual intercourse (sexual intercourse means that the penis was penetrated in the vagina or anus)		χ^2	P-value
	Yes n(%)	No n (%)		
High risk	59(20.6)	16(5.6)		
Sexual harrassment			12.607	0.000**
Yes	130(39.4)	127(38.5)		
No	54(16.4)	19(5.8)		
Perceived susceptibility			6.612	0.010*
Low	105(31.5)	101(30.3)		
High	83(24.9)	44(13.2)		
Perceived severity			4.844	0.028*
Low	73(22.1)	74(22.4)		
High	113(34.2)	70(21.4)		
Perceived Barriers			14.567	0.000**
High	84(25.4%	97(29.3)		
Low	101(30.5)	49(14.8)		
Cues to action			6.759	0.009**
Low	63(20.4)	68(22.4)		
High	109(35.9)	65(21.4)		

***p < 0.05, **p<0.01 , p<0.001**

6.1.2 Statistically significant association between independent variables and condom used in latest sexual intercourse.

With bivariate analysis was carried out to find association between all independent variables and condom used in latest sexual intercourse, the result revealed that there were four factors associated a with condom used in the latest sexual intercourse.

Table 36 described that structural variables, listed as knowledge of contraception became significant with p=0.042. Furthermore with perceived benefits had significant with 0.030. Self –efficacy also became significant with p=0.013. Regarding cues to action had significant with p=0.005 as shown below.

Table 36 Association between independent variables and condom used in latest sexual intercourse among sexual active students (n=187)

Variables	Condom use in latest sexual intercourse		χ^2	P-value
	Yes n(%)	No n (%)		
Knowledge of Contraception			6.338	0.042*
Poor	47(27.6)	32(21.2)		
Moderate	32(18.8)	12(7.1)		
Good	33(19.4)	10(5.9)		
Perceived benefits			4.733	0.030*
High	60(33.3)	21(11.7)		
Low	58(32.2)	41(22.8)		
Self-efficacy			6.235	0.013*
Low self- efficacy	52(29.1)	40(22.3)		
High	65(36.3)	22(12.3)		
Cues to action			7.830	0.005**
Low	31	30		
High	76	29		

***p < 0.05, ** p<0.01,**

6.1.3 Statistically significant association between independent variables and contraceptive used in latest sexual intercourse.

With bivariate analysis was carried out to find association between all independent variables and contraceptive used in latest sexual intercourse, the result revealed that there were two factors associated a with contraceptive used in the latest sexual intercourse.

Table 37 described that knowledge of contraception became significant with p=0.029. Furthermore, cues to action had significant with p=0.014, as shown below.

Table 37 Association between independent variables and contraceptive used in the latest sexual intercourse (n= 187)

Variables	Contraceptive use in the latest sexual intercourse		χ^2	P-value
	Yes n(%)	No n (%)		
Knowledge of contraception			7.060	0.029*
Poor	53(30.8)	28(16.3)		
Moderate	23(13.4)	21(12.2)		
High	37(21.5)	10(5.8)		
Cues to action			6.006	0.014*
High	21(40.4)	10(19.2)		
Low	10(19.2)	11(21.2)		

***p value < 0.05**

6.2 Multi-variable Logistic Regression Analysis

Multi-variable logistic regression was used to analyze the relationship between independent variables which p values were less than 0.2 in bivariate analysis and some variables that are theoretically important in previous studies (even >0.2 in bivariate analysis), and dependent variables from abstinence , condom used in the latest sexual intercourse and contraceptive used in the latest sexual intercourse.

6.2.1 Abstinence / no sexual intercourse

In order to find out the association with dependent variable abstinence, nineteen independent variables were put into the first step of logistic regression model. Those nineteen independent variables are age, sex religion, Grade Point Average, living arrangement, monthly income/pocket money, knowledge of HIV and STIs, knowledge of Contraception, knowledge of reproductive health, attitude of reproductive health, general risk behaviors, sexual harassment , communication skills , then perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self- efficacy, cues to action. As a result, all variables lost their significances. However, another option to find out the association, only independent variables with significant in bivariate

(p value<0.05) were put again into the first step of logistic regression model. Those eight independents variables were grade point average (GPA),knowledge of contraception, knowledge of reproductive health, attitude of reproductive health, , knowledge of reproductive health, communication skills, perceived benefits ,perceived barriers , and self- efficacy and sexual harassment . As result 4 variables remained significant as a result of first step of regression model as shown in table 4.36

The high knowledge of contraception used p value was 0.020 less than 0.05. It was significant association with no sexual intercourse /abstinence. There was a negative relationship between knowledge of contraception and sexual intercourse. It could be predicted that when the knowledge of contraception increase 29.8% the sexual intercourse will be decreased 20%, the abstinence will be increased 80% in the future.

The positive attitude towards reproductive health and reproductive rights p value was 0.005 which less than 0.05. Therefore , It was significantly association with sexual intercourse . There was negative relationship between positive attitude towards reproductive health and reproductive rights and sexual intercourse. It could be predicted that if the knowledge of reproductive health increase 0.5% the sexual intercourse will be decrease 4 .5 times, therefore abstinence will increase 4 times in the future.

For risk behavior, low risk behavior p value was 0.027 less than 0.05. It was significant association with sexual intercourse. There was a negative relationship between low risk and sexual intercourse. It could be predicted that when the risk increase 27% the sexual intercourse will be decreased 44.6%, the abstinence will be increased 54.6% in the future.

Regarding high risk behavior p value was 0.002. It was significant association with sexual intercourse. It could be predicted that when the risk increase 0.2% the sexual intercourse will be decreased 6 times, therefore the abstinence will be increased 6 times in the future

Table 38 Logistic regression analysis of sexual intercourse among students

Variables	OR	p-value	95% CI	
			Lower	Upper
Sex				
Female (reference)	0	0		
Male	.550	.105	.267	1.133
GPA				
<2.00 (reference)	0	0		
≥2.00	1.152	.733	.511	2.599
Knowledge of contraception				
Low level (reference)	0	0		
Moderate level	.716	.369	.346	1.483
High level	.298	**.020***	.108	.824
Knowledge of reproductive health				
Low level (reference)	0	0		
Moderate level	.343	.056	.114	1.029
High level	1.262	0.685	.410	3.888
Attitude of reproductive health & rights	1.262	.685	.410	3.888
Negative(reference)	0	0		
Neutral	.440	.061	.187	1.039
Positive	.165	**.005***	.047	.573
Sexual harassment				
No	0	0		
Yes	1.769	.165	.791	3.956
General risk behavior				
No risk (reference)	0	0		
Low risk	.446	**.027***	.219	.911
High Risk	.240	**.002***	.098	.586
Perceived susceptibility				
Low (reference)	0	0		
High	1.937	.095	.892	4.206

Variables	OR	p-value	95% CI	
			Lower	Upper
Perceived severity				
Low (reference)	0	0		
High	.837	.570	.454	1.544
Perceived Barrier				
Low (reference	0	0		
High	1.594	.176	.812	3.131
Cues to action				
Low (reference	0	0		
High	.773	.403	.423	1.413

*P value <0.05

6.2.2 Condom use in the latest sexual intercourse

In order to find out the association with dependent variable as condom use in the latest sexual intercourse, eighteen independent variables were put into the first step of logistic regression model. Those twenty independent variables are age, sex religion, Grade Point Average, living arrangement, monthly income/pocket money, knowledge of HIV and STIs, knowledge of Contraception, knowledge of reproductive health, attitude of reproductive health, general risk behaviors, sexual harassment , communication skills , then perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self- efficacy, cues to action. As a result, all variables lost their significances.

However, another option to find out the association, only independent variables with significant in bivariate (p value<0.05) were put again into the first step of logistic regression model. Those four independents variables were knowledge of contraception, perceived benefits, self- efficacy, and cues to action. As result all variables lost their significant as shown in table 4.38

6.2.3 contraceptive used in the latest sexual intercourse.

In order to find out the association with contraceptive use in the latest sexual intercourse, nineteen independent variables were put into the first step of logistic regression model. Those nineteen independent variables were age, sex, religion, Grade Point Average, living arrangement, monthly income/pocket money, knowledge of HIV and STIs, knowledge of Contraception, knowledge of reproductive health, attitude of reproductive health, general risk behaviors, sexual harassment , communication skills , then perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self- efficacy, cues to action. As a result, all variables lost their significances. However, another option to find out the association, only independent variables with significant in bivariate (p value<0.05) were put again into

the first step of logistic regression model. Those two independent variables were knowledge of contraception and cues to action, as result, one variable remained significant as a result of first step were contained final model as shown in table 4.37.

The cues to action p value was 0.017 less than 0.5. It was significant association with contraceptive used at latest sexual intercourse. There was a negative relationship between cues to action and contraceptive used latest sexual intercourse. It could be predicted that when the cues to action increase 17 % the contraception used will be decrease 43.1 % in the future.

Table 39 Multiple logistic regression analysis of contraceptive use latest sexual intercourse among students

Variable	OR	p-value	95% CI	
			Lower	Upper
Knowledge of contraception				
Low level (reference)	0	0		
High	.838	.410	.549	1.277
Cues to action				
Low (reference)	0	**0**		
High	.431	**.017***	.216	.863

*P<0.5

After multiple regression only cues to actions, maintained significance with contraceptive use in the latest sexual intercourse. In addition, high knowledge of contraception , neutral attitude towards reproductive health , low risk behavior, high risk behaviors have maintained significance to abstinence as shown in table 40 in details.

Table 40 Multiple regression of independent variable and safe sex behaviors among students

Variables	Abstinence		Lastest condom used		Latest contraceptive used	
	Bivariate (p value)	Multiple regression (p value)	Bivariate (p value)	Multiple regression (p value)	Bivariate (p value)	Multiple regression (p value)
Sex	0.047	.105 (NS)				
GPA	0.017	.733 (NS)				
Knowledge of contraception (High)	0.026	**.020***	0.042	.297 (NS)	0.029	.410(NS)
Knowledge of reproductive health	0.007	0.56 (NS)				
Attitude reproductive health (neutral)	0.000	**0.005***				
Behaviors	0.000					
Low risk		**0.027***				
High risk		**0.002***				
Sexual harassment	0.000	.165(NS)				
Perceived Susceptibility	0.014	0.095 (NS)				
Perceived severity	0.028	.570 (NS)				
Perceived benefits			0.030	.144 (NS)		
Perceived barrier	0.000	.176(NS)				
Self-efficacy			0.011	.187(NS)		
Cues to action	0.009	.403(NS)	0.005	.120(NS)	0.014	**0.017***

*p<0.05 , NS = not significant

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

The main purpose of this research was to study about the prevalence and factors associated with safe sex behaviors among adolescents government vocational students in Nakhon Ratchasima province based on modifying factors listed as socio-demographic, knowledge, attitude, perception, self-efficacy, and cues to actions and logistic regression were used to analyze in this study.

5.1. Discussion on Modifying Factors

5.1.1 Socio-demographic Characteristics

Age

The sample population of adolescent vocational students in this study included 335 unmarrieds who were in the age range from 15 to 19 years and categorized into three groups as 15, 16-17, and 18-19. The mean age of this study was 15.65 years (±1.7) years, from age range 15-19 year. The first sexual intercourse was 10 years old about 1.4% of the respondents had first sexual intercourse at an age before 11 years. Similarly in the study of Thai adolescent 1% of Bangkok adolescents reported having their first SI before age 11 years (Ruangkanchanasetr et al., 2005) and there was no significant association of age and safe sex behavior.

Even though there was no significant association of age and safe sex behaviors from literature review, there is a youth risk behavior survey in Bangkok from 2,311 adolescents in 8 school and 13 communities, in 2001 showed that age was one of the factors that were associated with sexual behaviors and first sexual intercourse adolescents reported it was one percent. They started their first sexual experience before the age of 11 years (Ruangkanchanasetr et al., 2005). Furthermore, a cross-sectional study in central of Thailand, except Bangkok was used to explore the factors influencing safe sexual behavior. Participants were 3,129 Thai adolescent ages 15-19 and studying in secondary school and vocational school through a free internet program on google drive, data were analyzed by using multinomial logistic regression analysis and multilevel regression analysis revealed a significant association between age and unsafe sexual behavior that unsafe sex behaviors escalated with age (Srijaiwong, Sindhu, Ratinthorn, & Viwatwongkasem, 2017).

Similarly, a descriptive sectional study on 15-24 years old youths who lived in Kisumu town in western Kenya mentioned that a significant association between age and contraceptive practice which had p-value 0.02(Oindo, 2002).

In this study, the age of the first sexual intercourse was very early, it can be explained that it may be linked to the hormonal drive and the environment, list such as social media , web pages that students have more chances to be exposed to. Social media and social environment are affecting both psychosocial and emotional changes and increasing cognitive and intellectual capacities. Also, the college environment that unprecedented social forces, including marketing and digital media, effects the students emotionally**.**

Sex

The population of this study out of 332 respondents, 140 (42.2%) was female, and 192 (57.8%) were male. About 187(60.9%) of male had experience in sexual intercourse and 70 (50%) of female had experience in sexual intercourse. Similarly, to a cross-sectional study of 386 early adolescents, around 52.3% had experience of sexual intercourse (Baokhumkong et al., 2017).

The study result showed an association between sex and sexual intercourse. Similarly, a cross-sectional survey of 405 young adults Thai urban and rural vocational schools, results showed gender, were related to the number of sexual partners (Rasamimari, Dancy, Talashek, & Park, 2007). However, there was a cross-sectional correlation study in 2003 on 425 vocational students' age 18-22 year in Bangkok with anonymous self- report questionnaires. The result showed that there was no significant association between sex and actual condom use (Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003). Furthermore, a cross-sectional study in 2009 on both married and unmarried 15-24 years old youths of Myanmar migrant workers in Bang Bon district, Bangkok also did not show a significant association between sex and contraceptive utilization (HAN WM, 2009).

Regarding the result in this study that male were more sexually active than female which could be explained that adolescent male had more biologically-determined sex drive and also behaviors of risk-taking and reproductive requirement. Moreover, female is not only focused on sex drive but more responsive to the surrounding circumstance including the influence of Thai traditions, cultural factors, education, religion, peer, family, and parents attitude and reputation. Therefore, male have sexual intercourse during studying more than female.

Religion

Out of 332 of the respondents, the majority of overall religion was Buddhist 311(93.7%) and another 6% was Muslim, Christian, Hindu, and no religion. This study revealed that there was no significant association between religion and safe sex behaviors. Similarly, a cross-sectional study with a survey, in 2016 on 430 Thai adolescent age 14-17 in a secondary school grade 9 through 12, in Nakhon Pathom, Thailand were Buddhist community (94.6%), and Muslim 4.1% and 1% Christian

design was used to assess parental and child factors that may affect early sexual initiation in 430 Thai adolescents. The prevalence of early sexual initiation (SI) was higher in Thai boys and was started at an earlier age. This study also revealed that there was no significant association between in early sexual initiation and religion. However, a study also mentioned that students with higher scores on spirituality were less likely to be involved in early sexual initiation (Roojanavech, Badr, & Doyle, 2016).

Level of Education (GPA)

In this study, all respondents were literate. Overall the female had higher GPA than male and in the moderate level of GPA, there was an association between GPA and sexual intercourse (p-value=0.015). However, their significances disappeared at the multiple logistic regression.

Similarly, a cross-sectional study with a survey, in 2016 on 430 Thai adolescent age 14-17 in a secondary school, in Nakhon Pathom, Thailand a study reported that grades were significantly associated with the early sexual initiative. The study also mentioned that children with higher grades were less likely to engage in early sexual behavior with (β=.78, OR=0.57, CI=0.138- 0.324, $p < 0.05$) (Roojanavech et al., 2016). Furthermore, a survey study in 2000 on 123 African American college student about factors influencing condom used in United States result reported that majority of the participants (68%) had a GPA of 2.5 or higher. However, regression analyses revealed no significant relationships between the GPA and condom use (Lewis, Lewis, Succop, & Rosenthal, 2000).

Living Arrangement

Out of 332 respondents, 177(53.3%) study in an urban, suburban and rural area and most of the respondents stayed with parents and then with a relative. There was a small number of student that stayed in the dormitory. To find the association between safe sex behavior and living arrangement there was no significant association.

However, a cross-sectional study in 2016, 386 students age 12-15 in grade 7 - 9, in Ubon Ratchathani, Thailand, the result revealed a premature sexual activity among adolescents that were significantly associated with living without one or both parents (ORadj = 12.43, 95%CI= 8.84-16.39), (Baokhumkong et al., 2017). Furthermore, a national survey on drug abuse among 12,000 interviewed college age in the USA in 1991 through 1993 found that college students who were not living with parents had the highest rates of current use and heavy use of alcohol (Gfroerer, Janet C. Greenblatt, & Douglas A. Wright, 1997).

In this study, it could be explained that regarding the highest number of college in the northeastern region (24 colleges), the vocational education system could provide comprehensive in this province. Even though commute from home to college with public transportation and their vehicle. Therefore, most of the student prefer to stay with their parents for more convenient and also it cheaper to travel than renting the room.

Income

The findings for income showed that 332 respondents 194(58.4 %) had a monthly income of less than 150 US dollars and only 73(22 %) had an income more than 150 US dollars per month. Income did not show association with safe sex behavior.

Nevertheless, the level of monthly income in this study did not show any significant association with safe sex behavior. Similarly a cross-sectional study in 2016, 386 students age 12-15, in Ubon Ratchathani, Thailand, the result presented that there was no significant association between income and premature sexual activity in early adolescents (Baokhumkong et al., 2017). Furthermore, a study on Myanmar migrants on married and unmarried youths in Bang Bon District, Bangkok in 2009 also found that there was no significant association between level of income and contraceptive utilization (HAN WM, 2009).

However, there is a cross-sectional population survey data on socio-demographic indices of 1515 women age between 18-45 years old, in Ireland 2010 it was revealed that different income groups were significantly affected with a chosen type of contraceptive utilization. For younger, not married, and high-income they used oral contraceptive pill, for married, had lower income they used Intrauterine contraception (Molloy et al., 2015).

5.1.2 Structural variable

5.1.2.1 Knowledge of HIV and STIs and level of knowledge

In this study, it was revealed that male had poorer knowledge than female. Overall 50% of the students had poor level of knowledge of HIV and 51.5% had poor knowledge of STI. However, about 70% of them know that HIV/AIDS is transmitted through blood or drug injection, and 66% with body fluid and only 57% of them know that HIV/AIDS is transmitted from mother to baby. There was no association of knowledge of HIV, STIs, and safe sex behavior.

Similarly, a study of high school girls age 16-19 years old student in 2013, Bangkor, Malaysia, the result revealed that the knowledge about the transmission of

HIV/AIDS is limited. All the respondents have heard about HIV/AIDS their knowledge and understanding on how it is transmitted is vague as less than one fifth know that HIV/AIDS can be transmitted through breastfeeding and only 54 percent know that it can be transmitted through blood, drug injection and bodily fluid (Saada, Subramaniama, & Tanb, 2013).

This is alarming that the knowledge of HIV and STIs was limited. Interestingly, only 36.7% knew about syphilis. According to a surveillance report of HIV and STI of Department of Disease Control (DDC), Ministry of Public Health, Thailand in 2012 indicated that the number of STIs was increasing among youth population age 15-24 years old (3.7/100,00 of the population) and the trend increased gradually every year. Furthermore, a study of Bangkok Metropolitan reported that the biggest proportion of syphilis patients were pregnant girls age 15-24 years old the trend of syphilis infection was increasing from 5% in 2005 to 8% in 2006 (Division of HIV/AIDS & Metropolitant, 2006). However most of them (74.7%), However, students knew if they have problems with STIs they would seek for treatment.

This may indicate that HIV/AIDS and STIs knowledge was not comprehensive to protect them from the risk of unsafe sex behavior and also to promote safe sex behavior among vocational students.

5.1.2.2 Knowledge of Contraception, method, and level of knowledge

Out of 332 respondents, female students had higher knowledge than male students. About half of respondents 153 (51.2%) had poor level of knowledge of contraception There was an association of knowledge of contraception and sexual intercourse among vocational students.

It could be seen that condom (80.1%), the emergency contraceptive pill (76.8%), and the oral contraceptive pill (76.2%), were the best -known among female vocational students because these two methods could get it over the counter in the drugstore. However, the percentage of practice was low only 62.3% knew how to use condom correctly and 42.2% for oral contraceptive pill. Similar to this study, there was a cross-sectional survey of 832 female vocational students in 2001, Chiangrai province, Thailand, the result revealed that 359 women (43.1%) with sexual intercourse history using condom and withdrawing before ejaculation to avoid pregnancy. The most well-known ranging from condom use and withdrawal to oral pills and emergency contraception (morning-after pill) within this subset of young women, only half were using an effective method, that is, oral pills, contraceptive injections, IUDs, diaphragms, spermicides, or the morning-after pill (Allen et al., 2003). A study regarding knowledge of contraception among users and providers, in Songkhla province, Thailand, the results demonstrated that knowledge on OC was fair, but that on ECP was poor. Pharmacists had better knowledge of proper history

taking and ECP indication than non-pharmacists (Ratanajamit & Chongsuvivatwong, 2001). Similarly, a survey study of 338 male and 358 female college students in Pennsylvania, USA in 2008, the result showed that college students had poor level of knowledge of emergency contraceptive pills. Only 17% indicated prior use of ECP and only 16% of the participants knew that ECP was available at their college health center (Miller, 2011).

There was a report on adolescent pregnancy which is also associated with less educational attainment and lower socio-economic status (UNFPA, 2015). The problem of other studies also suggested high rates of abortion among adolescents: in Thailand, an estimated 14% of all adolescent pregnancies ended in abortion in 2010 (Thongpriwan & Mcelmurry, 2009).

5.1.2.3 Knowledge of reproductive health and rights

This study presented that female had more knowledge than male. In terms of reproductive health, only 48.5% had knowledge about pregnancy. Furthermore, only 46.4% knew contraceptive services provided by the government. Only 46.4% of female respondents knew that Thai government provides IUD and contraceptive implant free of charge.

However, there was a study of representative household surveys, the 2006 and 2009 Reproductive Health Surveys to assess trends in equity to access to reproductive health services and service utilization in terms of coverage of family planning, antenatal care and skilled birth attendance in Thailand. High coverage of family planning (79.6%), universal antenatal care (98.9%) and skilled birth attendance (99.7%), with very small socioeconomic and geographic disparities, were observed. Public sector facilities, followed by drug stores, were a major supplier of contraception, which had a high usage rate. High coverage and low inequity were the results of extensive investment in the health system by successive governments (Kongsri, Limwattananon, Sirilak, Prakongsai, & Tangcharoensathien, 2011).

Interestingly, less than half (41.4%) of female students knew that they could continue their study even though they got pregnant. Moreover, on 15 October 2018, the Thai government had announced another act for a reproductive right that will be enforced in April 2019 that the school that expelled pregnant students will be banned (Bangkok post newspaper, 2018). This also shows that the Thai government has seen the importance of reproductive health and support. This is a good opportunity for pregnant students to continue their study and get real support from school and family.

Another issue that was a concern was over 60% of the respondents had poor level of knowledge of reproductive health. Similarly, a study reproductive health knowledge, attitudes and practices of 1111 university students youth in the Islamic Republic of Iran, the majority believed in the benefits of reproductive health

knowledge for youth but felt that services were inadequate (Mohammadi et al., 2006). Moreover, a study in Malaysia, in 2015 presented the level of reproductive health overall was poor including the limitation of knowledge regarding reproductive right also the health service that the government provided for them. (Rahman et al., 2015). Similarly, a cross-sectional study in Ethiopia had resulted that knowledge of reproductive health and reproductive right was higher than this study. A cross-sectional study was conducted among 642 regular undergraduates in Wolaita Sodo University, Ethiopia in 2013, about 54.5% of the respondents were found to be knowledgeable about reproductive and sexual rights. Utilization of reproductive health services [AOR: 2.34, 95% CI: 1.49, 3.69] and discussing sexual issues with someone else [AOR: 2.31, 95% CI: 1.48, 3.62], were positively associated with knowledge of reproductive and sexual rights. about reproductive and sexual rights were found to be low (Adinew, Worku, & Mengesha, 2013).

5.1.2.4 Attitude of reproductive health and level of attitude

In this study, it was shown that about 40 % of female and male revealed that girls should remain a virgin. Almost 50% of female disagreed that boys and girls had rights for kissing, hugging, and had sexual intercourse before marriage.

It can be explained that Thai tradition had a strong influence among vocational students in Nakhon Ratchasima province that was located in the northeastern part of Thailand. Similarly, a qualitative study in 2010 of 30 Thai parents and 36 adolescents age 15-19 years in Udon Thani province, Thailand, results were identified that the social judgment of girls and boys had double standards concerning the social norm for premarital sex as applied to young women on one side and young men (Chaweewan Sridawruang et al., 2010).

This study showed an association between positive attitude towards reproductive health and sexual intercourse (p value=0.005;95% CI=0.05-0.57). Similarly, there was a study in Malaysia of 1032 secondary school students which revealed that the risk factors for having permissive attitudes toward the practice of premarital sexual activities were male students (odds ratio [OR] = 1.83; 95% confidence interval [CI] = 1.34-2.48), being less religious (OR = 2.02; 95% CI = 1.49-2.73), and young adolescents were at risk of having permissive attitudes toward sexual behaviors, however, good knowledge on sexual and reproductive health and being more religious may protect them from it (Rahman et al., 2015).

Besides this study also showed the result of neutral attitude towards reproductive health. It could be interpreted that the students did not give enough importance of reproductive health, ignore problems and let someone else solve problems for them. This is quite alarming for family, health professional, and teachers

because when the problem occur such as unintended pregnancy, they will let other people solve the problem for them and the problem will come back again and again.

5.1.2.5 General health risk behaviors

In this study, it was revealed that male had higher risk than female. About 41.9% of students were consuming alcohol, and 25.6% were smoking. This study showed a result that around 15% of students were drug abused. From the overall students, more than 60% of respondents had high-risk behavior. Similar to a qualitative study in Khon Kaen province, Thailand reported that adolescents behavior was leading to high sexual risk, drinking alcohol, and smoking (Saranrittichai & Sritanyarat, 2006).

In this study, and bivariate analysis showed that alcohol, smoking, and drug use had strong significance with sexual intercourse (p-value 0.043). The Multiple regression showed an association between low risk (OR=.45; 95%CI=0.22-0.91) and high-risk behavior (OR=.24; 95%CI=0.10-0.59) and sexual intercourse. Similarly, there was a study of 270 Thai vocational students aged 18 to 21 years in Ubon Ratchathani province, Thailand in 2009 in which the result presented that alcohol/drug use was correlated significantly and negatively with actual condom use indicating that the more frequent adolescents used alcohol/drugs were less likely to wear condoms (Khumsaen & Gary, 2009). A cross-sectional study of 5,184 male high schools in central Thailand during 2008-2009 was conducted to explore current alcohol drinking in the previous 30 days. The results showed that the percent of current drinking was 12.17, there was an association of alcohol or drug use before last sexual intercourse (OR = 2.55, 95% CI = 1.44-4.53 (Chaveepojnkamjorn & Pichainarong, 2011). Moreover, a study using a nationally-representative sample of single young adults age 18-24 years from the National Sexual Behavior Study of Thailand (N=1,852), the result revealed that consumption of alcohol increases the likelihood of premarital sex (Fuller, Chamratrithirong, & Apipornchaisakul3*, 2017). Also a study of STD-/HIV-Related Sexual Risk Behaviors and Substance Use among 9th-12th-grade rural adolescents (N=5,745) in rural adolescents USA, the result indicated that smoking >3 days during the past 30 days was associated with unprotected sex (Yan, Chiu, Stoesen, & Wang, 2007).

We can conclude that alcohol, smoking, and drugs were factors that were associated with safe sex behavior among vocational adolescent students in Nakhon Ratchasima province. This could be explained that according to their class schedule and environment offer vocational students had more opportunities to expose to alcohol and drug abused.

Sexual Harassment

In this study, male (28.6%) had a higher experience of sexual harassment than female (11.4%), the Bivariate analysis showed strong significance of sexual harassment and sexual intercourse (p-value 0.000). However, all significance was lost in multiple logistic regression. Similarity, there was a study in 2009 of 1,296 adolescents high schools, vocational, the result showed that Thai youths maintain very intensive dating relationships, the out-of-school adolescents hold the highest dating violent behaviors. While males' dating violence scores were higher females were involved in all types of dating violence, exceeding the males on verbal/emotional violence (Pradubmook-Sherer, 2009). Furthermore, a study in American secondary schools, using 1993 survey data from a nationally representative sample of 1,203 were 8th to 11th graders in 79 public schools. The result showed that over half of the students reported both harassing and being harassed by their classmates (V. E. Lee, G, Linn, & Chen, 1996) Also bulling was in physical and verbal form (Pellegrini, 2002).

According to the result of this study, we can conclude that even though there was no significance in multiple regression there were studies from Thailand and USA that supported that sexual harassment is one of the factors of safe sex behaviors and male had been harassed more than female. This issues could affect the students and the study outcome teacher should pay attention to students whose behavior had changed and were separated from peers.

5.1.2.6 Communication skills

This study showed that male parents (51.9%) and peer (39.7%) were the first and second choice for them to ask if they had some questions concerning sex. Overall 60% of participants had poor level of communication skills for participants who had no partner. Interestingly. Regarding participants who had partners, their communication skills level was good. This study also showed that there was no association between communication and safe sex behaviors.

However, there was a study in the Midwest, USA which was contrary to this study. The survey was conducted with 157 boys and girls in grades 9 to 12 from two suburban high schools. The result revealed that parental communication did not have a significant influence on these adolescents' sexuality. Given the importance of both age and parental communication in predicting adolescent's sexuality, implications concerning the timing of communication become evident (Somers & Paulson, 2000). Furthermore, a study of 343 high school students and 246 families who had children 10-24 years of age in a rural town of 160 Km south of Addis Ababa, Ethiopia in 1999 the result revealed that more than half of them believed that this is unacceptable to discuss growth changes and sexual issues with parents during adolescence (Taffa et al., 1999).

It could be explained that participants who had partner pay more attention to preventing their pregnancy and sexually transmitted diseases because it affects their status in the college and their study. Thai traditional did not approve about pregnant during the study. Even though the college allowed them to continue their studies until completed.

Interestingly that medical professionals was ranked third, for students to seek for advice regarding sexual issues, this could be explained that the student felt shy, felt embarrassed to ask or the attitude of medical professionals regarding sexual behaviors made the students not trust them as well.

5.2 Perception Towards diseases and sexual practice

5.2.1 Perceived susceptibility

The study showed that female (72.1%) had low perceived susceptibility than male (59.4%). Bivariate analysis showed an association between perceived susceptibility and sexual intercourse (p-value= 0.010). However, all significance was lost in multiple logistic regression.

Similarly, there was a study in USA of 71 college students, in 2009 regarding their experience with sexual intimidate. The result revealed that the students were unaware of their own vulnerability to STIs. Only about 50% of the students were concerned about contracting an STI during a hookup that involved sexual intercourse, and the majority of the students were not concerned about contracting any STI during a hookup that went only as far as fellatio or cunnilingus(Downing-Matibag & Geisinger, 2009). Furthermore, a study randomized controlled trial on oral contraceptive pills of 1,155 low-income women 16–24 years of age between July 2006 and January 2010 result showed that perceived susceptibility was not associated with OC continuation (odds ratio (OR) 0.94, 95% confidence intervals (CI) 0.79–1.11), condom use at last sexual intercourse (OR 1.02, 95% CI 0.84–1.24), dual method use (OR 1.17, 95% CI 0.92–1.48) and subsequent pregnancy (hazards ratio 1.08, 95% CI 0.77–1.49) during the 12-months follow-up period.

It could be explained that most of the female respondents perceived no risk of HIV and STIs and no risk of pregnancy. Therefore, the result of this study showed that higher number of abstinence can be leading to higher number of perception of no risk of HIV and STI, even though the significance was not found after multiple regression in this study.

5.2.2 Perceived Severity

This study showed that about 50% of the perceived severity of HIV, AIDS, STIs, and pregnancy, and health problem if gotten pregnant. There was no different among male and female. Overall the perceived severity was high (55.2%). Bivariate analysis showed an association between perceived susceptibility and sexual intercourse (p-value= 0.028). However, all significances were lost in multiple logistic regression.

Even though this study did not show a significant association ,however, a study of Thai female adolescents vocational students in southern part of Thailand were found that adolescents with sexual experience had higher average scores of severity perception and risk for contracting sexually transmitted diseases than those without sexual experience ($p < .05$)(Konggumnerd, Sindhu, & Tongkong, 2012a).

5.2.3 Perceived Benefits

This study showed that the percentage that strongly agreed regarding condom use on female(49.3%) higher than male(41.6%). Over half o the respondents agreed that condom used can prevent pregnancy and sexually transmitted diseases. Furthermore, bivariate analyzed had shown significant association of perceived benefits and condom used in the latest sexual intercourse. However, all significances lost in multiple logistic regression.

However, a study of sexually active participants among Thai adolescents in vocational students revealed that only 6.3% reported using condoms every time when having sex at the beginning of the relationship, and 10.2% during the last few times. Twenty-four percent of sexually active participants had unplanned pregnancies, and 7% had sexually transmitted diseases (STDs). The predictive model of condom use consisted of perceived benefits from using condoms; interactions between intention to use condoms and modifying factors listed as age, gender, knowledge of STDs, HIV/AIDS, pregnancy, alcohol use, and peer norms. Predictor set explained 27% of the variance in condom use (Thato et al., 2003).

It could be explained that female pay more attention to the surrounding circumstance and female according to sex drive, they also would like to have a partner and sexual experience. However, female pay attention Thai traditional and culture factors, that their parents and family will lose their face if she gets pregnant during studying. Therefore, contraception and condom use are the solution for them to have partner and finish their studies without worrying about the reputation of their family.

5.2.4 Perceived barriers

This study showed that both male and female students most disagreed to the condom used barriers listed as embarrassed to buy condom, did not enjoy, insult their partner, and did not know how to use. There was no difference between male

and female. Bivariate analysis showed an association between the perceived barrier and sexual intercourse. However, their significance was lost in multivariate analysis.

However, a study of Thai vocational students aged 18 to 21 years of 270 vocational age 18-24 from three vocational schools in Ubon Ratchathani Province, Thailand. The results showed that variables were not associated with actual condom use including gender, age, duration of the current intimate relationship, perceived preventive behavioral peer norms, and knowledge of STDs, HIV, and pregnancy (Khumsaen & Gary, 2009). Furthermore, a cross-sectional survey conducted from June to July 2002, in Benin, West Africa of two hundred fifty one (251) individuals, the result perceived condom as ineffective (OR = 9.8, 95%CI = 3.2–30.0) and having reported problems with using the condom (OR = 3.6, 95%CI = 1.3–9.9) were both associated with the lack of use of condom (Hounton, Carabin, & Henderson, 2005).

5.3 Self- efficacy

This study showed that female (58.6%, 47.9%) had strongly agreed on confidence to avoid sex, and condom used more than male (34.4%,41.6%). Overall students had high self- efficacy (62.0%). The bivariate analysis had a significant association with condom use in the latest sexual intercourse. However, their significance was lost in multivariate analysis.

Even though this study did not show significant relation, there was a study of 270 Thai vocational students aged 18 to 21 years to examine the relationships among condom use self-efficacy, and actual condom use among Thai and sexual behavior. The results revealed that condom use self-efficacy (B 5 .183, t 5 2.382, p, .05) were statistically significant predictors of actual condom use (Khumsaen & Gary, 2009). Furthermore, a study among 197 high school students in Northern, Thailand in 2016, the result showed that the scorings of knowledge test on STI prevention correlated with self-efficacy toward safe sex ($P < 0.001$) (Yamaguchi et al., 2016).

5.4 Cues to actions

Cues to action are the stimulus that is needed to trigger decision making to accept the recommended health actions, In this study, we studied the external list such as internet, health education, symptoms of STIs, peer influence, parent, traditional and culture. The level of cues to action was high and in bivariate**,** there was an association between cues to action and safe sex behaviors listed as abstinence, condom used in latest sexual intercourse, and contraceptive used in the latest sexual intercourse. In multivariate analysis contraception used in the latest sexual intercourse still remained (OR.43, 95%CI; 0.22-0.86).

Internet: This study showed that male (57.3%) used the internet more than female (45.7%) for information about sexual activities. Around 40% used for scientific

information and 35.2% for chatting, and 35% for viewing pornographic pages. Similarity, there was a study in the UK about social media and the internet about 40% of men and women reported that school was the main common source of information on sexual matters (Latham-Cork, Porter, & Straw, 2017). Furthermore, a study of high school students (N = 1,208) aged 12– 18, in Los Angeles, United States, the result showed that seventeen percent both sent and received texts, unprotected sex were positively associated with reports of texting 300 or more times per day (Rice et al., 2017). Also there was a cross-sectional study among 529 Greek high school students, in 2009, the result reported the internet was used for sexual education (AOR¼5.26; 95% CI¼1.78–15.55), chat rooms (AOR¼2.95; 95% CI¼1.48–5.91), internet use for sexual education (AOR¼7.39; 95% CI¼2.37–23.00)(Tsitsika et al., 2009).

Regarding of chatting , in this study about there was self-selected anonymous Internet sample online questionnaire about chatting and dating, 4984 among Dutch men who have sex with men. The result found that eighty-two per cent chatted at least once a week, 88% had ever dated through chatting, and of these 89% had had sex with one or more e-dates(Hospers, Kok, Harterink, & Zwart, 2005).

In this study, it could be explained that from their hormone drive and behaviors of more adventure of male than female, the percentage of using the internet for the sexually related issue was higher than female. In addition, male students felt losing face to ask some advice from friends regarding sexually related issues, so they prefer to find out from using the internet. Also, they felt safer and more comfortable to visit the website to view pornography without telling anybody. However, seeing pornography sometime quite boring, chatting is a popular new meeting place for adolescence and attracts their sex partners a different demographic profile.

Health education: In this study, female (69.3%) had higher health education about sex more than male (60.4%), overall 64.2% of students received health education. There was a study among 2301 high school teenagers and 351 parents in Chiangmai, Thailand, 2006. The result revealed that school-based sex education is biologically focused and inconsistently delivered (Vuttanont, Greenhalgh, Griffin, & Boynton, 2006). Furthermore**,** the study of a nationally representative survey, 2002 National Survey of Family Growth, among 2,019 never-married males and females aged 15–19 years. The result showed that receiving sex education was associated with not having had sexual intercourse among males (OR .42, 95% CI .25–.69) and postponing sexual intercourse until age 15 among both females (OR .41, 95% CI .21–.77) and males (OR.29, 95% CI.17–.48). Males attending school who had received sex education were also more likely to use birth control the first time they had sexual intercourse (OR 2.77, 95% CI 1.13– 6.81); however, no associations were found among females between receipt of sex education and birth control use. These patterns varied among socio-demographic subgroups (Kohler, Lisa E. Manhart, & Lafferty, 2008).

The percentage of sexual health education of this study was quite low, it could be explained that vocational college was training students for working as engineers or technician, besides sex education, reproductive health and reproductive right are more scientific and law related. Therefore, teachers need to ask from health professional to come and give sessions to students which need more time to arrange the health education session.

Symptoms of STIs: Out of 332 respondents 146 (44.0%) reported that practice of safe sex from having friend experience the symptoms of STI. There was a study in 2016 among 197 high school students age 15-24 in Northern of Thailand, to examine the current state of knowledge and sexual behavior concerning the prevention of sexually transmitted infections (STIs), the result showed positive correlations in medical checkup on the symptoms of STIs between the self-efficacy toward safe sex and coping with the symptoms of STIs (In chlamydia symptoms: decision-making and interacting: $P < 0.05$ and 0.05, respectively, and in gonorrhea symptoms: decision-making :$P < 0.05$) (Yamaguchi et al., 2016)

Peers: This study showed that 51.2% of students received advice from friends to have one steady partner to practice safe sex.

There was a study in 2014 regarding influencing of peer and behaviors in the adolescent student. The study was conducted among technical colleges 1778 students in Bangkok and Nakhon Ratchasima provinces of Thailand. The result showed that peer influence is a significant contributor to Thai adolescents' participation in substance abuse and that engaging in religiosity may assist adolescents to internalize negative aspects of harmful drugs into positive perceptions and encourage them to avoid alcohol and illegal drugs (Wongtongkam et al., 2014).

Family :In this study about 46% discussed with parent regarding sex-related issues, similarly l a study that family is also important according to a survey of 1,725 vocational students age 15-21 years in northern, Thailand , the result showed that communication with parents are important factors within the sexual activity of college students (Lehr et al., 2000).

Social and culture influence: This study showed that 49.5% of student perceived that their parent was very strict about sex issues. Similarly, to a qualitative study among 30 Thai parents and 36 adolescents 15-19 years in Udon Thani, Thailand the result showed that female respondents practiced safe sex because her family will lose face when she gets pregnant (Chaweewan Sridawruang et al., 2010). A study in Canada examined the influence of Eastern cultural heritage on relationship preferences among second-generation immigrants to the West, the result found a cultural influence on “traditional” mate attribute preferences and familial cultural was a better mediator of the culture-traditional attribute preference relationship than the more generic measure of interdependent self-construal.

It can be explained that even though the economy of Nakhon Ratchasima province has grown fast in recent years due to the mega-project that government invested, however, all economic area is only in the city. Most of the population are farmers and that living in suburban and rural area with tradition and culture still strong to influence the community. Therefore, parent and family were still very strict about sexual issues.

5.5 Adolescent vocational student safe sex behavior

5.5.1 Abstinence

In this study, out of 332 vocational students, the percentage of abstinence female (50%) was higher than male (39.8%).

This finding is related to a study of the prevalence of sexual intercourse by using data from the Thailand Global School-Based Student Health Survey (GSHS) 2008, assessed the prevalence of sexual intercourse in the last 12 months and its associated factors among adolescents (N = 2758). Overall the prevalence of sexual intercourse past 12 months was 11.0% (14.6% males and 7.6% females). Variables positively associated with the outcome in multivariable analysis were male gender (OR = 1.66;95% CI 1.14–242), older age, ≥15 years (OR= 2.60, 1.80–3.74), current alcohol use (OR= 2.22, 1.46–3.36), psychosocial distress (OR= 2.11, 1.44–3.09) and among females current smoking (OR= 5.47, 1.62–18.48), lifetime drug use (AOR= 4.35, 1.04–18.3) and lack of parental or guardian bonding (AOR = 0.51, 0.27–0.97). Efforts to control unhealthy lifestyles (substance use) and psychosocial distress may impact on adolescents' sexual activity (Peltzer & Pengpid, 2011). Similarly, there was a randomized controlled trial study among 662 African American students grade 6 and 7, in urban public school, the northeastern United States in 2002, the result showed that abstinence-only intervention reduced sexual initiation (risk ratio [RR], 0.67; 95% confidence interval [CI], 0.480.96). Abstinence-only intervention reduced sexual initiation (risk ratio [RR],0.67; 95% confidence interval [CI], 0.480.96) (III, Jemmott, & Fong, 2010).

5.5.2 Condom use among vocational students

In this study, out of 187 respondents, 118(79.7%) used condom for their first sexual intercourse and (63.1%) used condom in the latest sexual intercourse. The percentage of using condom correctly was about 67.4% for the first and 57.8% for the latest sexual intercourse.

This study is related to a study of 270 Thai vocational students aged 18 to 21-year Ubon Ratchathani Province, Thailand to explore actual condom use. The result revealed that 51 participants (28.3%) never used condoms at the beginning of a

sexual relationship and never used condoms in a sexual relationship (Khumsaen & Gary, 2009). Furthermore, This study presented that 924 youth, aged 15-24 years Thai and non-Thai out-of-school youth regarding condom use for first sexual intercourse overall was about 80% and 75.4% did not use condoms consistently (Musumari et al., 2017). Moreover, a study among 1208 high school students, age 12-18 years old in Los Angeles, United State reported that 11.7% of students revealed that having sexual intercourse without using condom (Rice et al., 2017).

Use condom at the latest sexual intercourse

In This study, the latest condom use for overall 63.1% , male(65 %)and used condom higher than female(60.0%) Compared to low-income country condom use during the last occasional intercourse was declared by only 36.8% of males and 47.5% of females. Based on the HBM, failure to use condom was related to its perceived lack of efficacy [OR = 9.76 (3.71–30.0)] and perceived quality [OR = 3.61 (1.31– 9.91)](Hounton et al., 2005).

Compare to this study and the study that was done nine years before, it showed that the Thai government campaign on condom use and the percentage of using condom was still low and not effective. This study also showed an inconsistency of using condom among vocational students.

5.5.3 Contraceptive use among vocational students

This study shows that overall respondent about 77.9% used any of the contraceptives at the first sexual intercourse, and 63.6% in the latest sexual intercourse. Female used contraception more than male for the first and latest sexual intercourse. In bivariate analysis, there was two variable associated with contraceptive used listed as knowledge of contraception and cues to action. In multivariate analysis, one variable still remained was cues to action (OR=0.43; 95%CI 0.22-0.86).

This study showed that there was no consistency in using contraception among vocational students. The result was also related to a cross-sectional study of using contraception among 832 female vocational students female to explore risk for HIV, sexually transmitted diseases (STDs), and unintended pregnancies. This audio-computer-assisted self -interview (ACASI) survey for characteristics; knowledge, attitudes, and beliefs related to HIV and STDs; contraceptive practices; sexual experiences and behaviors; and drug use. The result reported that a total of 359 women (43.1%) reported sexual intercourse among this population 27.3% (n = 98) had been pregnant low levels of contraceptive use, and drug and alcohol use(Allen et al., 2003). Moreover, ,a descriptive cross-sectional study of 388 youth aged 15 – 24 years in 2002 in Kisumu town in western Kenya. This study revealed that majority of

the youth are sexually experienced (73.5%) with most of the first sexual experiences occurring within the 15-19 years age group. There is a high level of knowledge (99.2%) of contraceptive methods and a positive attitude towards contraception. However, the level of contraceptive use is relatively lower (57.5%) even for the sexually active. Factors influencing this practice are associated with the individual's background as well as health delivery systems (Oindo, 2002).

5.6 Conclusion

The total respondents were 332 vocational students who joined this study and the result of data reported that female had high knowledge of HIV and STIs, contraception than male. This study showed that the level of knowledge was poor, the attitude toward reproductive health was neutral. From the data, it was also indicated that also almost 40% of the student had no risk behaviors and 22.6% in the group had high-risk behaviors. The communication about sexual issues was poor, except student who has a partner reported good communication. Regarding perceived susceptibility, perceived severity was in the low level. However, perceived barrier was (50.0%). The study also showed an inconsistency of condom and contraceptive use among vocational student in Nakhon Ratchasima province.

This study revealed factors associated with safe sex behaviors listed as 1) abstinence/ no sexual intercourse, 2) condom use in the latest sexual intercourse, and 3) contraceptive use in latest sexual intercourse.

1) In bivariate analyzes in there were eleven factor associated with abstinence listed as sex, grade point average, knowledge of contraception, knowledge of reproductive health, risk behaviors, sexual harassment, perceived susceptibility, perceived severity, perceived barrier, and cues to action. In multivariate analysis only 4 variables still remained; moderate knowledge of contraception, positive attitude toward reproductive health and reproductive rights and both high and low-risk factor.

2) In bivariate analysis, there were 4 factors association with condom used listed as knowledge of contraception, perceived benefits, self-efficacy, and cues to action. However, in multiple regression, all variable had lost their significance.

3) In bivariate analysis, there was two variable associated with contraceptive used listed as knowledge of contraception and cues to action. In multivariate analysis, one variable still remained was cues to action (OR=0.43;95%CI 0.22-0.86).

5.7 Strengths and limitations

Strengths

- This is the first study among vocational student in Nakhon Ratchasima province based research study which emphasizes specifically on safe sex behaviors and factors related to it.

- Regarding the population of vocational student, this study covers almost 80% of the population.
- Sensitive questions for sexual activity status and sexually history were answered by self-administered questionnaire in order to increase sincere answers on their experiences because participants were not shy to disclose their sexual experiences.

Limitation

- Since this study assesses the independent and dependents variables simultaneously as a cross-sectional study, there was no evidence of a temporal relationship between independent and dependent variables. Besides this research could not identify the effects of relationship.
- Time to collect the data did not match the students' schedule.
- This is a self - administered questionnaire, that students might give socially desirable answers.
- Moreover, this study should have done an in-depth interview for a more specific area such as sexual harassment question which should specify more for regarding physical, verbal abuse.
- In this study condom used was included in the knowledge of contraception, but did not include as the choice of contraceptive method at the first and latest sexual intercourses.

5.8 Recommendation

Recommendation for policy maker

Based on these findings of the study, recommendations for improving

- For health education curriculum should also include reproductive health and reproductive rights for students to have the knowledge and then practice correctly.
- The collaboration of the Ministry of Public health and Ministry of Education including social media for promoting communication such as facebook , internet
- Training program for teachers regarding reproductive health and reproductive rights including counseling teachers as well.

Recommendation for Program implementation level

- To provide sexual and reproductive health education in the colleges.

Recommendation for future research

- Further research is needed to assess whether comprehensive sexual and reproductive health and reproductive rights includes communication between medical professional and students, quality and content are related to services used to understand adolescents' sexual and reproductive health knowledge and needs.

- The next research should perform in-depth for more specific area of sexual harassment.
- The researcher should study more about the vocational college semester and the time schedule before collecting data and should also include private vocational students in the study as well.
- Future research, researcher and assistants should spend more time with students in the colleges for student acquaintance to researcher and giving true answers regarding sexual behaviors.
- The next quantitative research should add condom used as contraceptive use at first and latest sexual intercourse and why they did not use contraception at the first and latest sexual intercourse? So far every intercourse the researcher can know the reason of inconsistency of contraception and condom use was lower at the latest sexual intercourse and in the lifetime compared to the first sexual intercourse.

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