https://nmsjournal.kaums.ac.ir/
Nursing and Midwifery Studies. 2024; 13(4): 259-267
https://doi.org/10.48307/nms.2024.467129.1444

Research Article Open Access

Condom use and risky sexual behaviors among vocational certificate students: A cross-sectional study in Thailand, 2024

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Received: 10 July 2024 **Revised:** 12 November 2024 **Accepted:** 8 December 2024 **e-Published:** 10 December 2024

Abstract

Background: The rising incidence of sexually transmitted diseases (STDs) among adolescents is a significant public health concern in Thailand, often linked to risky sexual behaviors.

Objectives: This study aimed to examine both risky and preventative sexual behaviors among vocational certificate students in Songkhla Province. Additionally, it sought to identify the factors that influence condom use within this demographic.

Methods: A cross-sectional survey was conducted from March to May 2024, targeting students aged 18 to 24 years in Southern Thailand. We developed a comprehensive questionnaire and collected data through self-administered online surveys. Descriptive statistics were employed to outline the baseline characteristics of the participants, while binary logistic regression was used to analyze factors associated with regular condom use. The analyses performed using R software.

Results: A total of 656 participants completed the questionnaire, with 55.9% identifying as male, and all respondents were single. The mean age at first sexual intercourse was 15.99 years (±1.17) for males and 15.96 years (±1.22) for females. Lifetime regular condom use was reported by 57.0% of participants, while 47.8% indicated consistent condom use throughout their sexual experiences. Regular condom usage was positively associated with having multiple sexual partners (P value=0.01), whereas reliance on oral contraceptives (P value<0.001) and emergency contraception (P value<0.001) correlated with lower rates of consistent condom use.

Conclusion: Nearly half of the surveyed students reported inconsistent condom use, with risky behaviors linked to having multiple partners, a preference for convenience, and reliance on alternative contraceptive methods such as oral and emergency pills. Future educational interventions are essential to clarify misconceptions about condom use, promote safer sexual practices, reduce the transmission of STDs, and prevent unintended pregnancies.

Keywords: Sexually transmitted diseases, Students, Condoms, Sexual behavior.

Introduction

The rising prevalence of sexually transmitted diseases (STDs) among adolescents is a pressing public health issue, influenced by evolving socioeconomic and cultural factors. Data from the Centers for Disease Control and Prevention (CDC) reveal that individuals aged 15 to 24 represent approximately 50% of new STD cases in the United States.[1] The most commonly reported STDs include trichomoniasis, chlamydia, gonorrhea, and syphilis. In response to this alarming trend, the World Health Organization (WHO) has established ambitious targets aimed at reducing the incidence of syphilis and gonorrhea among adolescents aged 10 to 19 by 90% between 2018 and 2030.[2]

Engaging in risky sexual behaviors heightens an individual's vulnerability to STDs and unintended pregnancies, which can have detrimental effects on both overall health and sexual and reproductive well-being. For instance, a review of literature indicates a troubling rise in acquired syphilis in Brazil, with reported cases increasing from 12.3 per 100,000 people in 2011 to 81.4 per 100,000 in 2017.[3] Similarly, Colombia reported an incidence rate of active syphilis at 300 cases per 100,000 population in 2016.[4] In Thailand, national data show that while the prevalence of STDs declined from 1985 to 2005, it has been on the rise since then, with syphilis and gonorrhea being the most frequently reported STDs, occurring at rates of 8.2 and 15.8 cases per 100,000 population, respectively.

This increase is often linked to declining condom use and a rise in risky sexual practices.[5]

Research focusing on sexual behaviors among college students has uncovered a variety of risky practices, including unprotected intercourse, multiple sexual partners, alcohol use, and early initiation of sexual activity.[6] Studies conducted in Thailand have highlighted that vocational school students are particularly vulnerable to STD infections and often lack sufficient knowledge about safe sexual practices.[7] The mean age of first sexual intercourse among these students is around 15.9 years, with males typically starting younger than females. Alarmingly, only 35.2% of women and 29.9% of men reported using condoms during their first sexual encounter.[8,9]

Further studies indicate that condom use among high school students is notably low; for example, Tipwareerom et al., reported a usage rate of just 33%.[10] A population survey in Chiang Mai revealed that regular condom use among adolescents aged 10 to 19 was only 17.2% for females and 23.7% for males.[11] The consequences of unsafe sexual practices are significant, leading to issues such as unintended pregnancies, STD infections, and HIV transmission. A study conducted in Chiang Mai found that 65.2% of pregnant women aged 15 to 24 who visited a prenatal clinic reported unplanned pregnancies.[12] Additionally, research by Lee et al., among adolescents aged 13 and older in HIV clinics in northern Thailand indicated that while 77.8% were aware that condoms could prevent HIV transmission, only slightly more than half (55.6%) understood that condoms could also prevent pregnancy.[13]

Despite these concerning statistics, there remains a notable gap in research regarding the preventative and risky sexual behaviors of students in Thailand.[9-12] Understanding these issues is critical for developing effective intervention strategies aimed at addressing these challenges and promoting safer sexual practices among young people.[13-15]

Objectives

This study aimed to identify risky and preventative sexual behaviors among vocational certificate students in Songkhla Province, Thailand. Additionally, we sought to explore the factors associated with condom usage within this population.

Methods

Study design and population

We conducted a cross-sectional survey across four colleges in Songkhla Province, targeting students aged 18 to 24 who were pursuing vocational certificates. The survey was administered using self-administered online questionnaires from March to May 2024.

Sample size calculation and sampling

To determine the sample size, we focused on our primary objective of identifying risky and preventative sexual behaviors. We utilized a sample size estimation formula based on proportions.[16,17] Previous research by Prasartwanakit et al.,[9] indicated that the prevalence of regular contraceptive use ranged from 29.9% to 35.2%. To test our hypothesis, we calculated the sample size for categorical outcomes with an alpha (α) of 0.05, a margin of error (d) of 0.10, and assumed a 10% non-response rate. This resulted in a requirement of at least 88 respondents.

To select participants, we employed a one-stage cluster sampling technique. Enumeration areas (EAs) -which were districts in Songkhla- served as the primary sampling units. We randomly selected four colleges from a total of sixteen EAs using a web-based randomizer. Participants were included if they were between the ages of 18 and 24 and completed the questionnaire. Out of 695 enrolled participants, 39 were excluded: 32 (82.1%) were deemed ineligible, while 7 (17.9%) provided incomplete information.

Measurements and variable definitions

The questionnaire was developed by the authors and underwent content validity assessment by three specialized physicians and STD experts, who evaluated it using an item-objective congruence index. The reliability of the questionnaire was confirmed with a Cronbach's alpha of 0.86.

The survey collected demographic information, including sex, age, marital status, religion, and socioeconomic status. We also assessed living arrangements, specifically co-residence with parents.

We gathered data on sexual experiences and relationships, such as the age at first sexual intercourse, number of partners, types of relationships, personal sexual experiences, and risky sexual behaviors -defined as having multiple partners, engaging in anal intercourse, or not using condoms regularly. To evaluate condom usage among individuals who had engaged in sexual intercourse, participants indicated how often they or their partners used condoms, choosing from four options: never, occasionally, most of the time, and always. For our analysis, we defined regular condom usage as using condoms most or all of the time.[14,18,19]

Furthermore, we included four questions utilizing five-point Likert scales to assess attitudes toward condom

usage, ranging from 1 (completely disagree) to 5 (completely agree).

Data collection method and online questionnaire completion

Data for this study were gathered through an online survey, designed to enhance convenience and accessibility for participants. This digital approach allowed us to reach a large number of vocational students, enabling them to engage with the survey at their own pace while ensuring the integrity of the data collected.

Participants accessed the questionnaire via a secure online link, where they were first prompted to provide informed consent before proceeding. The questionnaire was crafted to be self-administered, featuring straightforward instructions and closed-ended questions to facilitate easy completion without requiring external assistance. The online platform ensured confidentiality, allowing respondents to answer privately and encouraging them to provide honest responses regarding their sexual behaviors and condom usage.

Data analysis

Data were analyzed following the completion of the online questionnaires. Descriptive statistics were employed to outline the baseline characteristics of the participants. Categorical variables were presented as frequencies and percentages, while continuous variables were summarized using means and standard deviations (SD). To explore factors associated with regular and consistent condom usage, both univariate and multivariable analyses were conducted using binary logistic regression. Variables with a P-value of 0.1 or lower from the univariate analysis were considered candidate factors for further analysis. These variables underwent multivariable analysis utilizing a backward stepwise method. The final model was selected based on the lowest value of the Akaike information criterion (AIC),[20,21] with a P-value of less than 0.05 deemed statistically significant. Statistical analyses were performed using R version 4.4.0 software (R Foundation, Vienna, Austria).

Ethical considerations

Before completing the questionnaire, participants were provided with an informed consent form detailing the study's purpose and procedures. The research received approval from the Ethics Committee of the Faculty of Nursing at Prince of Songkla University (No. 2023-St-Libarts-034).

Results

A total of 656 respondents completed the questionnaire, and the baseline characteristics of the participants are summarized in Table 1. The mean age of the participants was 20.20 years (±1.14). Among them, 55.9% identified as male, and all participants were single. Specifically, 61.7% reported being single without a partner, while 2.6% were in a relationship and living together with a boyfriend or girlfriend. Additionally, 69.7% of the participants lived with their parents, and 91.9% resided in Songkhla province. Nearly all participants held high vocational certificates and identified as Buddhists.

Table 1. Demographic data of the study population

Factor	N=656 (%)
Gender	
Male	367(55.9)
Female	289(44.1)
Age, year	
18	180 (27.4)
19	108(16.5)
20	206(31.4)
21	123(18.8)
22	39(5.9)
Education	
Vocational certificate	18(2.7)
High vocational certificate	638(97.3)
Marital status	
Single and do not have a boy/girlfriend	405(61.7)
Single with a Boyfriend/Girlfriend but Do Not Live Together	234(35.7)
Single with a Boyfriend/Girlfriend and Living Together	17 (2.6)
Married	0(0)
Separated/divorced/widowed	0(0)
Living with parents	457(69.7)
Monthly personal income, baht	
≤5000	32(4.9)
>5000–10,000	393(59.9)
>10,000–15,000	227(34.6)
>15000	4(0.6)
Religion	
Buddhism	615(93.7)
Islam	41(6.3)
Residence	
Songkhla province	603(91.9)
Other provinces	53(8.1)

Table 2 highlights various risk behaviors associated with STD and HIV transmission. Of the respondents, 31.6% reported having had sexual intercourse at some point in their lives, with an average age of first SI at 15.98 years (SD 1.16). Breaking this down by gender, males had their first SI at an average age of 15.99 (±1.17), while females

reported an average age of 15.96 (±1.22). Among those with SI experience, 47.3% indicated that they had used drugs or alcohol prior to engaging in sexual intercourse, and 14.5% reported having multiple partners. Additionally, 7.2% of participants noted having SI during menstruation.

Table 2. Risk behaviors for sexually transmitted diseases and HIV infections

Risk behavior	N (%)
Personal experience (N=656)	
Experienced watching adult media	421(64.2)
Experienced bodily assault	0(0)
Experienced sexual assault	0(0)
Engaged in gambling	0(0)
Had an unintended pregnancy	0(0)
Alcohol drinking (N=656)	
Never	485(73.9)
Occasionally	171(26.1)
Smoke regularly	74(11.3)
Have experience with marijuana	6(0.9)
Sexual health behavior (N=656)	
Individuals who have had sexual intercourse at least once in their lifetime	207(31.6)
Sexual activity (N=207)	
Single partner	177(85.5)
Oral sex	146(70.5)
Used drugs or alcohol prior to sexual activity	98(47.3)
Visited a brothel	20(9.7)
Engaged in sexual intercourse during menstruation	15(7.2)
Telephone sex	12(5.8)
Anal sex	4(1.9)
Used erotic materials	2(1.0)
Role-play	1(0.5)
Bondage/sadism and masochism	0(0)
	Mean(SD)
First sexual experience, year	15.98(1.16)

Table 3 presents data on condom usage and attitudes towards condoms and other forms of contraception. Notably, 47.8% of participants reported always using condoms during SI throughout their lives, while 54.6% maintained consistent condom use over the past three months. Overall, 57.0% of participants practiced regular condom use in their lifetime, and 31.6% did so in the past three months. When examining gender differences in lifetime condom use, male participants reported a rate of 51.4% (57 out of 111), while female participants reported a rate of 43.8% (42 out of 96). For consistent condom use over a lifetime, the figures were 62.2% for males (69 out of 111) and 51.0% for females (49 out of 96). Regarding attitudes towards condom use, the average score indicating that using condoms reduces pleasure was 4.62 (±0.57), while the mean score for the perception that using condoms is not inconvenient was 4.48 (±0.70). Additionally, 28.5% of participants reported regular use of oral contraceptive pills, while 20.8% used emergency contraceptive pills, and 54.6% relied on the withdrawal method.

Table 3. Condom usage, attitudes toward condoms, and other contraceptive methods among respondents with sexual experience (N=207)

Lifetime condom usage	N(%)
Never	16(7.7)
Occasionally	73(35.3)
Most of the time	19(9.2)
Always	99(47.8)
Regular usage [a]	118(57.0)
Condom usage in the past 3 months	
Never	24(11.6)
Occasionally	42(20.3)
Most of the time	28(4.3)
Always	113(54.6)
Regular usage [a]	207(31.6)
Other contraceptive methods	
Use of oral contraceptive pills	59(28.5)
Use of emergency contraceptive pills	43(20.8)
Withdrawal method (ejaculating outside the body)	113(54.6)
Attitude score toward condom usage	**Mean(SD)**
The belief that using a condom during sexual intercourse reduces pleasure	4.62(0.57)
The belief that using condoms during sexual intercourse is convenient	4.48(0.70)
The belief that using condoms during sexual intercourse is not a wasteful expense	3.90(0.77)
The belief that condom usage is highly effective in preventing the transmission of STDs and HIV infection	4.69(0.70)

[a] Regular condom usage is defined as having used a condom either most of the time or all of the time. HIV: Human Immunodeficiency Virus, SI: Sexual Intercourse, STD: Sexual Transmitted Disease

Table 4. Factors associated with regular condom usage over a lifetime: univariate analysis

Factor		Univariate analysis	
		Odds ratio (95%CI)	**P-value***
Gender	Male	Ref	
	Female	0.63 (0.36-1.10)	0.10
Age group, year	<20	Ref	
	≥20	0.52 (0.26-1.03)	0.06
Education	Vocational certificate	Ref	
	High vocational certificate	1.00 (0.54-1.85)	0.98
Marital status	Single and in a relationship with a boyfriend/girlfriend, living together	Ref	
	Single and in a relationship with a boyfriend/girlfriend, but not living together	1.71(0.52-5.59)	0.37
Living with parents	Yes	Ref	
	No	2.49(1.41-4.41)	0.002
Monthly personal income, baht	≤10,000	Ref	
	>10,000	0.58(0.32-1.14)	0.11
Residence	Songkhla province	Ref	
	Other provinces	1.32(0.50-3.51)	0.57
Risk behavior	Experienced watching adult media [a]	0.95(0.54-1.66)	0.86
	Consumes alcohol regularly [a]	0.99(0.55-1.77)	0.99
	Smokes regularly [a]	1.16(0.55-2.43)	0.69
	Has tried marijuana [a]	1.13(0.18-6.93)	0.89
Number partner	Single	Ref	
	Multiple partners	3.52(1.37-9.06)	0.009
Sexual activity	Age of first sexual experience, year	1.00(0.79-1.27)	0.97
	Has experienced oral sex [a]	0.73(0.39-1.35)	0.32
	Has used drugs or alcohol before engaging in sexual intercourse [a]	1.63(0.93-2.84)	0.08
	Has visited a brothel [a]	2.32(0.87-6.17)	0.08
	Has had sex while menstruating [a]	0.35(0.11-1.06)	0.64
	Has experienced telephone sex [a]	4.02(0.86-18.67)	0.77
	Has engaged in anal intercourse [a]	2.29(0.23-22.44)	0.47
	Has used erotic materials [a]	0.75(0.04-12.19)	0.84
Attitudes toward condom usage (1-5)	Using a condom during sexual intercourse reduces pleasure	0.66(0.40-1.10)	0.11
	Using condoms during sexual intercourse is convenient	15.94(7.84-32.41)	<0.001
	Using condoms during sexual intercourse is not a wasteful expense	3.05(2.02-4.63)	<0.001
	Condom usage is highly effective in preventing the transmission of STDs and HIV infection	8.56(3.42-21.37)	<0.001
Other Contraceptive Methods	Uses oral contraceptive pills [a]	0.22(0.007-0.06)	<0.001
	Uses emergency contraceptive pills [a]	0.02(0.005-0.087)	<0.001
	Practices the withdrawal method [a]	0.05(0.02-0.12)	<0.001

* Logistic regression, [a] Data show only "yes group" while reference groups (no group) are hidden.

Factors associated with regular condom usage

Initially, candidate factors for analysis included gender, age group, living situation (with parents), number of sexual partners, experience with drugs or alcohol prior to SI, experience in a brothel, various attitudes towards condom usage, and other contraceptive methods. Univariate analysis was conducted to identify potential associations, and the final model was determined based on the lowest Akaike Information Criterion (AIC) value through multivariable analysis using a backward stepwise method, as shown in Table 4. Regular condom usage throughout one's lifetime was positively associated with the use of oral contraceptives and emergency contraceptive pills, as well as having multiple partners.

Table 5 illustrates the factors related to consistent condom usage over a lifetime. Candidate variables that

yielded a P-value of 0.1 or lower in the univariate analysis included age group, living situation (with parents), number of partners, history of drug or alcohol use before SI, various attitudes towards condom use, and other contraceptive methods. Factors significantly associated with consistent condom usage were identified in both univariate and multivariable analyses, as depicted in Figures 1 and 2, respectively.

Table 5. Factors associated with regular condom usage over a lifetime: multivariable analysis

Factor	Odds ratio (95%CI)	P-value
Number partner		
Single	Ref	
Multiple partners	11.15 (1.66-74.92)	0.01
Attitudes toward condom usage		
Using condoms during sexual intercourse is convenient	4.33 (1.24-15.06)	0.02
Other contraceptive methods (1-5)		
Uses oral contraceptive pills [a]	0.004 (0.001-0.02)	<0.001
Uses emergency contraceptive pills [a]	0.002 (0.001-0.017)	<0.001

[a] Data show only "yes group" while reference groups (no group) are hidden.

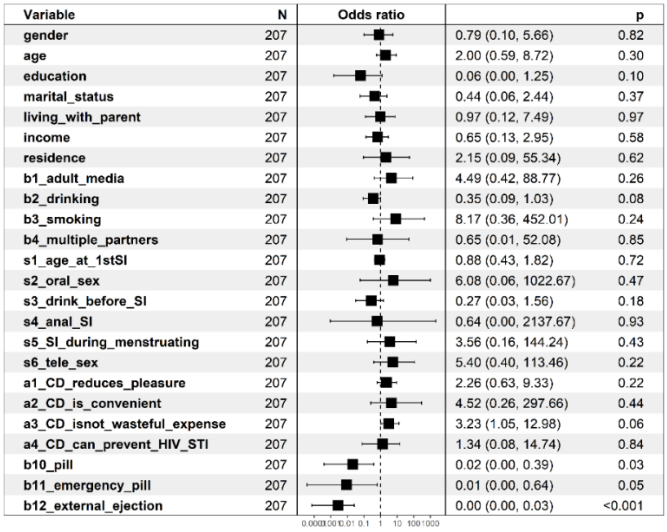

Figure 1. Forest plot of odds ratios for lifetime condom usage: univariate analysis

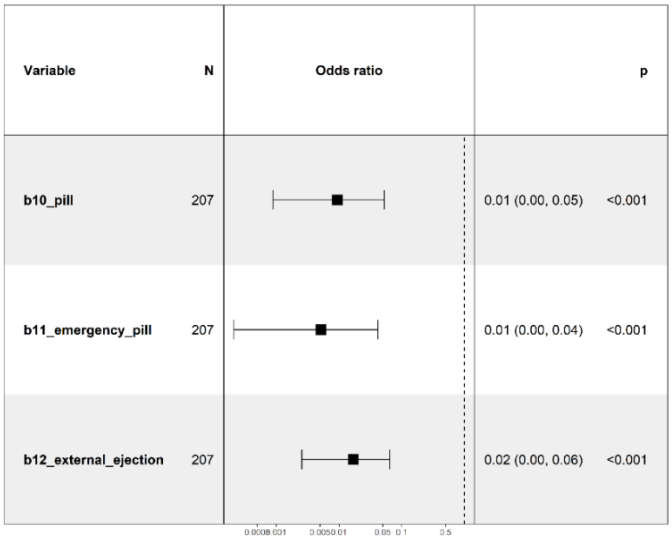

Figure 2. Forest plot of odds ratios for lifetime condom usage: multivariable analysis

Discussion

This study provides valuable insights into the risky sexual behaviors of adolescents in Songkhla province, Thailand. Our findings reveal that the average age of first sexual intercourse aligns closely with previous research. For instance, a study by Somrongthong et al., in Bangkok reported that the average age of first intercourse was 15 years, with 18.8% of participants having had sexual experiences.[21] Similarly, Pinyopornpanish et al., found that the mean age of first SI among adolescents and adults in Chiang Mai ranged from 20.5 to 20.9 years, highlighting potential differences based on the demographics of the study populations.[11] Furthermore, a national survey by Ford et al., indicated that 89.4% of individuals aged 18 to 39 had engaged in sexual intercourse, underscoring the importance of early sexual education and awareness about safe practices in schools, particularly since many adolescents are entering this phase of their lives.[11,22,23]

Additionally, targeted campaigns to promote condom use should be directed at young people who are eager to explore new experiences, including sexual ones. This demographic is often more vulnerable to concerns about sexually transmitted infections (STIs) and unintended pregnancies.

The prevalence of risky sexual behaviors observed in our cohort underscores the critical need for improved sexual health education among adolescents. For example, Pilgrim et al., reported that 28.3% of Ugandan adolescents had multiple sexual partners,[24] while Vasilenko et al., found that 30% of their participants shared this behavior.[25] In our study, 14.5% of respondents reported having multiple sexual partners, suggesting a potential cultural shift among today's youth regarding sexual norms. Additionally,

alcohol consumption emerged as a significant risk factor for STD transmission;[26] in our study, 26.1% reported general alcohol use, and 47.3% admitted to using drugs or alcohol before engaging in sexual activity. These behaviors may contribute to impaired judgment and reduced awareness when it comes to practicing safe sex.[27]

Regarding condom use, our findings indicate that 54.6% of participants reported consistent condom usage over the past three months, while 47.8% maintained this practice throughout their lives. These rates are consistent with previous studies; for example, Gutierrez et al.,[28] found that 52.4% of Brazilian adolescents aged 15-24 practiced safe sex, and Siu et al.,[29] reported a similar rate among Taiwanese students during their first sexual encounter. Tafuri et al.,[30] also noted that 52.6% of Italian adolescents consistently used condoms.

Interestingly, our study revealed a higher rate of regular condom use among males compared to females, which aligns with earlier research findings. Pinyopornpanish et al., noted that men were more likely to report condom use, possibly due to prevailing male-dominated cultural norms.[11,31] Males often cite the need to protect themselves from STIs when engaging with casual partners, which correlates with the association between having multiple partners and regular condom use observed in our study. Conversely, females may feel pressured to respect their partner's decisions or may have had negative experiences when attempting to negotiate condom use, making it challenging for them to advocate for protected intercourse.[31]

In addition to having multiple partners, the use of birth control methods was linked to both regular and lifetime condom usage. The social landscape surrounding the behavior of engaging with multiple partners has evolved, largely due to the influence of global cultural exchanges facilitated by social media and disruptive technologies. Haque et al., explored the relationship between risk perception and condom use among Thai teenagers, revealing that the type of partner significantly impacted condom usage. Teenagers were more likely to use condoms with casual partners primarily to guard against STIs, while they tended to use condoms with regular partners mainly to prevent pregnancy.[32] Similarly, a study conducted by Apakupakul et al., on condom use among adolescents in Bangkok highlighted that consistent condom use is crucial for preventing STIs and HIV transmission with casual partners; however, many felt that condom use was unnecessary with regular partners.[33]

One strength of the present study is its comprehensive examination of various factors related to risky behaviors and preventive practices within the target population. The findings provide valuable insights into the current state of sexual health among adolescents. However, there are notable limitations. Teenagers under 18 were excluded from the study due to ethical considerations, which may lead to an underrepresentation of certain perspectives. Conducting face-to-face interviews could yield deeper insights into issues such as motivations for condom use, risk perceptions, and attitudes toward contraception. Additionally, future research should focus on developing targeted condom promotion programs aimed at young people.

Conclusions

Nearly half of the students reported inconsistent condom use, and risky behaviors were associated with having multiple partners, a preference for convenience, and reliance on alternative contraceptive methods such as oral and emergency pills. Future educational interventions are essential to clarify misconceptions about condom use, promote safer sexual practices, reduce the transmission of STIs, and prevent unintended pregnancies.

Acknowledgment

The authors would like to extend their heartfelt gratitude to Dr. Th.T for their invaluable guidance during the manuscript preparation process.

Competing interests

The authors declare that they have no competing interests.

Abbreviations

World Health Organization: WHO; Sexually transmitted disease: STD; Centers for Disease Control: CDC; Enumeration Areas: Eas; Akaike Information Criterion: AIC.

Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

Funding

None.

Role of the funding source

None.

Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

Before completing the questionnaire, participants were provided with an informed consent form detailing the study's purpose and procedures. The research received approval from the Ethics Committee of the Faculty of Nursing at Prince of Songkla University (No. 2023-St-Libarts-034).

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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How to Cite this Article:
Tunthanathip S, Laeheem K. Condom use and risky sexual behaviors among vocational certificate students: A cross-sectional study in Thailand, 2024. Nurs Midwifery Stud. 2024; 13(4):259-267. doi: 10.48307/nms.2024.467129.1444