

# Sexual Health Risks Among Young Thai Women: Implications for HIV/STD Prevention and Contraception

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This paper examines factors that may place female Thai adolescents and young adults at risk for HIV, sexually transmitted diseases (STDs), and unintended pregnancies. A total of 832 female vocational students participated in a cross-sectional audio-computer-assisted self-interview (ACASI) survey after providing informed consent. The questionnaire covered: sociodemographic characteristics; knowledge, attitudes, and beliefs related to HIV and STDs; contraceptive practices; sexual experiences and behaviors; and drug use. Oral fluid was tested for HIV antibodies and urine was tested for illicit drugs and for the presence of gonococcal or chlamydial nucleic acids. A total of 359 women (43.1%) reported sexual intercourse history, with an average age at first sex of 17.6 years, and a 2.6 mean number of lifetime sex partners. Twenty-one percent of the entire sample reported coerced sexual contact or intercourse. Among those with sexual intercourse experience, 27.3% ( $n = 98$ ) had been pregnant and the majority of their most recent pregnancies were terminated. Three tested positive for HIV antibodies. Sexually active young Thai women report behaviors or experiences that may expose them to HIV/STD infection and unintended pregnancy in the future. These include unprotected intercourse, sexual coercion, low levels of contraceptive use, and drug and alcohol use. Culturally appropriate interventions that increase their awareness of and ability to respond to these sexual health risks are needed.

**KEY WORDS:** HIV; STD; unintended pregnancy; sexual health risks; female adolescents; Thailand.

## INTRODUCTION

Very little is known about sexual risk behaviors among young Thai women who are not female sex workers. The limited data that are available indicate that although there has been a reported

increase in levels of premarital sexual experience among Thai women over the past 20 years, very few practice safe sex or use contraception (Bond *et al.*, 1999; Ford and Kittisuksathit, 1994; Mills *et al.*, 1997; Podhisita and Pattaravanich, 1995). This study among female adolescents and young Thai women attending secondary and postsecondary vocational schools in northern Thailand provides information about sexual risk-taking behaviors in a region noted for a high prevalence of HIV and sexually transmitted diseases (STDs).

Much attention in the early years of the HIV/AIDS epidemic in Thailand focused on female sex workers (FSWs) and their male clients in northern Thailand (Nopkesorn *et al.*, 1993; Weniger *et al.*, 1991). Epidemiologic investigations documented a 62% increase in HIV among FSWs between 1988 and 1991 and a 17.3% prevalence among military conscripts

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by 1992 (Kilmarx *et al.*, 2000). In response to these findings, initial government efforts to control the epidemic focused primarily on the commercial sex industry (Mason *et al.*, 1995; Mastro and Limpakarnjanarat, 1995; Nelson *et al.*, 1996; VanLandingham *et al.*, 1993; Xenos *et al.*, 1993). Subsequent investigations identified an increase in HIV seroprevalence among child-bearing women in northern Thailand who were wives or girlfriends of men who frequented female sex workers. Two striking aspects of this phase of the epidemic were the higher prevalence of HIV among primigravida women under the age of 25 years and a reported absence of casual sex partners among infected women (Bunnell *et al.*, 1999; Siriwasin *et al.*, 1998; Xu *et al.*, 2000).

Recent analyses of AIDS-related mortality trends for northern Thailand indicate that most HIV transmission occurs during adolescence and early adulthood (Kilmarx *et al.*, 2000) with substantial increases among the population of women who are 20–24 years old (G. J. P. van Griensven *et al.*, 1998). Some studies suggest that young Thai women who are not female sex workers constitute an increasingly vulnerable population. Contributing factors include an increase in premarital sex among women, having a partner whose sexual networks include female sex workers, the influence of friends and peers, and the limited communication between Thai men and women in matters related to sex (Bond *et al.*, 1999; Cash *et al.*, 1997; Ford and Kittisuksathit, 1994; Havanon, 1996; Havanon *et al.*, 1993; Mills *et al.*, 1997; Knodel *et al.*, 1996b; Podhisita and Pattaravanich, 1995; Weiss *et al.*, 1996; Xenos *et al.*, 1993; Xu *et al.*, 2000). Many of these factors also have been associated with limited access to contraception and high levels of unsafe abortion among unmarried Thai women (Gray and Punpuing, 1999; Soonthorndhada, 1996). Taken together, these circumstances suggest that sexually active young Thai women from the general population constitute a segment of the population who may be increasingly exposed to HIV and STD transmission and unintended pregnancy in the future.

This paper is grounded in the premise that an identification of sexual health risks within particular populations provides an important entry point for HIV prevention efforts. To that end, we examine sexual health risks within an understudied population of young Thai women. We report data drawn from a larger study of drug use and HIV risk behaviors among male and female Thai vocational students in Chiang Rai Province in northern Thailand (F. van Griensven *et al.*, 2001). The results presented

in this paper focus on the subset of 832 female students.

## METHOD

### Setting

Chiang Rai Province, with its population of 1.26 million people in 1998, is predominantly rural, agricultural, and ethnically Thai. Situated within the northernmost part of Thailand, Chiang Rai has been a prominent center of Thailand's HIV epidemic since the late 1980s, although there have been indicators of declining HIV incidence there in recent years (Bunnell *et al.*, 1999; Weniger *et al.*, 1991; Hanenberg *et al.*, 1994; Kilmarx *et al.*, 2000). Chiang Rai, which borders Laos and Myanmar to the north, is located within the Golden Triangle, an area known for its opium production and trafficking and, more recently, for methamphetamine production and trade (Hemarajata, 1989; Phongpaichit *et al.*, 1998). Methamphetamine use among adolescents and young adults has been increasing in Thailand and neighboring countries and its effects on HIV/STD risk behavior have not been well documented, although it appears to contribute to risk in other parts of the world where its use has become prevalent (e.g., Craib *et al.*, 2000). Available studies of sexual experience, social networks, and substance use among adolescents and young adults in Thailand indicate that Chiang Rai, with its prevalence of HIV/STDs and its ties to the drug trade, is an important locale for considering risk-taking behaviors within its unmarried population (Gray and Punpuing, 1999).

### Study Participants and Enrollment

Respondents were recruited from three privately operated vocational and commercial schools in Chiang Rai Province. Private and public schools of this type in three different geographic locations (central city or “muang” district, suburbs, rural areas away from the central city) were approached for the project and those willing to collaborate were invited for participation. A total of 832 female students agreed to participate in the study. See F. van Griensven *et al.* (2001; available at <http://www.pediatrics.org/cgi/content/full/108/1/e13>) for a detailed description of enrollment methods. In brief, it was explained to students (in a classroom setting) that the study consisted of a computer interview with questions about

their sexual and drug use behavior and that their oral fluid would be tested for HIV and their urine for STDs and drug use. Subsequently, students were asked for written informed consent. Students were provided with four options for participation: (1) anonymous linked participation (student retained a unique code constructed by the computer for later retrieval of HIV and STD test results); (2) anonymous unlinked participation (student retained no code for retrieval of HIV and STD test results); (3) mock participation (students who did not want to participate, but wished to avoid disclosure of their refusal completed all study procedures, but their data and specimens were discarded); and (4) refusal of participation. No names or personal identifiers were collected as part of the study and only 5% chose the "unlinked" option, which would permit them to anonymously obtain their test results. The obtained sample represented 99.4% of those invited. The remainder refused (0.4%) or chose mock participation (0.2%).

The protocol was approved by the Ethical Review Committee of the Thai Ministry of Public Health and by an Institutional Review Board of the U.S. Centers for Disease Control and Prevention. No names or personal identifiers were collected during data collection. No incentives were provided, although male condoms were distributed as part of a general posttest counseling session for participants in classroom settings (individual posttest counseling was provided to those who sought their results; see below). A summary of the results was provided to the administrators of the participating schools.

## Procedures

Questionnaires were developed based on previous research in Thailand, social behavioral theory, and focus groups with Thai students. Questions covered: sociodemographic characteristics; knowledge, attitudes, and beliefs about and perceived susceptibility to HIV and STDs; contraceptive practices; sexual experiences and behaviors; and drug use. Questions were edited in an Audio-Computer-Assisted Self-Interviewing (ACASI) format, translated into Thai, and pilot-tested, and wording was adjusted prior to administration (Rumakom *et al.*, 2000). Respondents completed the questionnaires using 80 workstations connected to an LAN server.

After completion of the ACASI-based survey, but prior to specimen collection, classroom-based pretest counseling was provided by a study nurse. Oral fluid samples for HIV testing were collected us-

ing the Orasure Salivary Collection Device (Epitope, Inc., Beaverton, OR). Urine specimens for detection of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, methamphetamines, and opiates were obtained using a plastic urine collection cup fitted with a temperature indicator to detect adulteration (F. van Griensven *et al.*, 2001). Individual posttest counseling, was made available to students who wished to submit their unique code to the study staff (who were not staff of the participating schools). This included individual risk reduction counseling as well as referral for treatment and care, as needed. Submission of the code was the only way in which the identity of a respondent could be linked to a test result. Three female students tested HIV-seropositive; however, they had not elected to receive their results. Because of the nature of the anonymous identifier, it was not possible to follow up these young women.

Univariate analyses were obtained to identify variables related to sexual and risk-taking behaviors. Variables significant at  $p < .05$  were entered into logistic regression models.

## Measures

In addition to questions that explored respondents' sociodemographic characteristics, respondents were also asked questions about their sexual experience and steady and casual sexual relationships. Sexual contact was defined as erotic stimulation of the genitals including oral sex, but not anal or vaginal penetration. Sexual intercourse was defined as penile penetration of the vagina or anus. A respondent was identified as being sexually coerced if she ever had sexual contact or sexual intercourse against her will. A steady sexual partner was defined as someone the respondent knew for more than 2 months, had sex with regularly, and felt an emotional bond with. A casual sexual partner was one with whom the respondent only had sex with, but not for pay. Two summative scales, with three Likert-type items each, were used to assess respondents' knowledge about the transmission of STDs and HIV. A summative two-item scale (with Likert-type items) was used to assess their worry and perceived risk of getting HIV in the future.

## RESULTS

### Demographics

Table I summarizes demographic characteristics of the sample. Nearly all of the female students

**Table I.** Background Descriptive Characteristics of the Sample ( $N = 832$ )

	<i>n</i>	%
<i>Individual characteristics</i>		
Age (years)		
15–18	439	52.8
19–21	393	47.2
Education		
Senior secondary	433	52.0
Postsecondary	399	48.0
Living situation		
Live with parents or relative	529	63.6
Live in rented room or dorm	236	28.4
Other	67	8.1
<i>Family characteristics</i>		
Parents		
Married/living together	613	77.0
Divorced/separated/not living together	121	14.5
Other	70	8.4
Father's occupation		
Agriculture	552	66.3
Skilled or semiskilled	111	13.3
Unskilled	47	5.6
None	27	3.2
Other	95	11.4
Mother's occupation		
Agriculture	476	57.2
Housewife	187	22.5
Skilled or semiskilled	56	6.7
Unskilled	27	3.2
None	22	2.6
Other	64	7.7
Number of siblings (range 0–11)		
None	105	12.6
1	489	58.8
2	151	18.1
3+	87	10.5

(94.8%) were of northern Thai origin and the majority came from agricultural backgrounds. Ages ranged from 15 to 22 years, with a mean of 18.4 years. Enrollment in two levels of vocational schools (senior secondary and postsecondary) was almost equally split, 52% and 48%. More than half of the students lived with their parents or a relative, and approximately one fourth lived in a dorm or rented room. The majority came from families in which the parents were married or living together and from families with two children or less. According to the administration of the schools, less than 1% of the students were married, hence, marital status was not evaluated further in our analysis.

### Knowledge and Perceptions About HIV and STDs

The women's knowledge regarding the transmission and prevention of HIV was mixed. Whereas

86.8% ( $n = 722$ ) agreed with statements that HIV could be transmitted during sexual intercourse, from the sharing of needles, and from mother to baby, only 33.1% were absolutely certain condom use could protect against HIV infection, although an additional 46.9% were somewhat certain that condoms were effective in this regard. Agreement with statements about the possible transmission of HIV through casual contact was also high, with 81.7% ( $n = 680$ ) agreeing that HIV could be casually transmitted through behaviors such as kissing on the cheek, drinking from the same glass, using the same eating utensils, or working near those who were infected. Knowledge about STDs also was mixed. Although 55.6% ( $n = 463$ ) agreed that a condom could prevent STD infection, only 28.5% ( $n = 237$ ) knew that STDs could make a woman infertile and only 35.5% ( $n = 295$ ) knew an STD could be passed from mother to child.

The women's responses to a two-item scale about their perceived risk and worry about becoming infected with HIV indicated that 7.5% ( $n = 62$ ) rated it high to very high. Of these, 56.5% ( $n = 35$ ) reported a sexual intercourse history, hence, there was a small group of women with much concern about HIV risk who did not appear to have obvious evidence of HIV exposure risk. Questions about getting an STD elicited a similar trend: only 3.5% ( $n = 29$ ) expressed high to very high levels of concern. Of this smaller subset, 62.1% ( $n = 18$ ) reported ever having had sexual intercourse.

### Sexual Experience

As shown in Table II, 43.1% of the 832 respondents ( $n = 359$ ) reported having had vaginal or anal intercourse, with an average age at first intercourse of 17.6 years. Six percent ( $n = 22$ ) of the urine samples for those who reported a history of sexual intercourse tested positive for chlamydia (*C. trachomatis*) and 0.8% ( $n = 3$ ) for gonorrhea (*N. gonorrhoeae*); three females tested positive for HIV antibodies. All three who tested positive for HIV reported having had sexual intercourse during the previous 3 months and all reported never having used a condom.

Among the sexually experienced subgroup ( $n = 359$ ), 5.8% had ever accepted money, gifts, or favors in exchange for sex. Most (90.4%) said they were sexually attracted to men only (Table II). The mean number of lifetime steady male sex partners among females with a history of sexual intercourse was 2.6 partners (range = 0–22; median = 2). Fifty

**Table II.** Sexual Experience and Partner Characteristics of Study Participants

	<i>n</i>	%
Sexual history among the sample as a whole ( <i>N</i> = 832)		
No sexual contact or intercourse	346	41.6
Sexual contact only (erotic genital stimulation, including oral sex, excluding penetrative sex)	129	15.3
Sexual intercourse (penile penetration of the vagina or anus)	359	43.1
Among the sexually experienced ( <i>N</i> = 359)		
Age, in years, at first sexual intercourse (range 13–21 years)		
13–16	78	21.7
17–18	186	51.8
19–21	95	26.5
Ever accepted money, gifts, or favors in exchange for sex		
Yes	21	5.8
No	338	94.2
Total male steady partners in lifetime (range 0–22; median 2)		
None	8	1.9
1	170	47.4
2+	181	50.4
Total male casual partners in lifetime (range 0–15; median 0)		
None	309	86.1
1+	50	13.9
Age difference with current partner (range –3 to 20+ years)		
Partner is 1–3 years younger	60	16.9
Partner is same age to 1 year older	124	34.9
Partner is 2–4 years older	108	30.4
Partner is 5+ years older	63	17.5
Steady partner's occupation		
Student	209	58.2
Skilled or semiskilled	59	16.4
Unskilled	26	7.2
Other or none	61	17.0

women (13.9%) reported ever having had a casual sex partner. The majority of women's sex partners were within 3 years of their own age (76.1%), with a mean difference of the partner being 2.2 years older than the respondent. More than half of the women's steady partners were also students, 16.4% of their partners were engaged in skilled or semiskilled labor, and 7.2% were unskilled laborers.

### *Sexual Coercion*

Twenty-one percent of the full sample (*n* = 175) reported ever having been forced to have sexual contact or sexual intercourse against their will, with an age range of 5–21 years at first occurrence (Table III). Among these 175 women was a subset of 101 who had experienced sexual intercourse. These represented 28.1% of the sexually experienced women in the sample.

Of the 175 young women who had experienced sexual coercion in some form, 2.9% (*n* = 5) had experienced it before the age of 12 years, 12.0% (*n* = 21)

had experienced it between the ages of 13 and 15 years, and 85.1% (*n* = 149) had first been sexually coerced at the age of 16 years or older. Among the subset of females who had not yet experienced sexual intercourse (*n* = 473), 9.9% had been forced to have some other form of sexual contact against their will. Among those who had been forced to have sexual intercourse against their will, only 22.8% (*n* = 23) reporting condom use during such forced encounters.

### *Condom Use*

A minority of the young women in the sample reported condom use. One fourth of those with sexual experience said a condom had been used during their first sexual encounter (Table III). Among the subset of women who had been sexually active during the previous 3 months, only 2 (0.7%) had always used a condom during every sexual encounter, whether with a steady or casual partner. Among the 283 women who had sexual intercourse with a steady partner during the previous 3 months, 4.9% (*n* = 14) had always used

**Table III.** Sexual Behaviors Among Study Participants

	<i>n</i>	%
Among the sample as a whole ( <i>N</i> = 832)		
Sexual coercion: ever forced to have sexual contact or intercourse against will	175	21.0
Among the sexually experienced ( <i>N</i> = 359)		
Ever had sexual intercourse against will	101	28.1
With steady or casual partner	94	26.2
With known acquaintance	46	12.8
With unknown person	27	7.5
With family member or friend of family	6	1.7
Condom use		
Always used with steady partner in past 3 months ( <i>N</i> = 283)	14	4.9
Always used with casual partner in past 3 months ( <i>N</i> = 23)	10	43.5
During first sexual intercourse ( <i>N</i> = 359)	92	25.6
During coerced sexual intercourse ( <i>N</i> = 101)	23	22.8
Pregnancy history		
Ever pregnant	98	27.3
Outcome of most recent pregnancy		
Abortion	81	82.7
Delivery	4	4.1
Other (including currently pregnant, miscarriage, stillbirth)	13	13.3

a condom. Among the subset of 23 women who had sexual intercourse with a casual partner during the previous 3 months, 43.5% (*n* = 10) had always used a condom.

#### *Contraceptive Use and Pregnancy History*

Half of the women who had ever had sexual intercourse reported using a method to avoid pregnancy, ranging from condom use and withdrawal to oral pills and emergency contraception (morning-after pill). A similar proportion was reported among women who had sexual intercourse during the previous 3 months. 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. The other half relied on withdrawal or periodic abstinence. Among the women with a history of sexual intercourse, 27.3% said they had ever been pregnant (Table III). The majority of their most recent pregnancies (82.7%) had been terminated.

#### *HIV Testing*

A history of HIV testing was reported by 10.1% of the full sample (*n* = 84). Testing was associated with sexual history,  $\chi^2(2, N = 832) = 24.15, p < .001$ , such that HIV testing was more often reported among those who had had sexual intercourse (15.9%) than those who had only experienced

sexual contact (7.9%) or had no sexual experience of any kind (4.9%). The most common reasons for testing included: sex with a partner (any type except commercial) (29.5%), feeling worried that they had “somehow gotten HIV” (20.5%), feeling sick (17.9%), testing in conjunction with blood donation (14.3%), and partner request (11.9%).

#### **Substance Use**

Most of the young women in the full sample (80.5%) reported some level of alcohol use in the past 3 months, with 68.8% reporting having ever having drunk three or more drinks at one time. Within this latter subset of 572 women, 98.8% reported having drunk three or more drinks at a time during the previous 3 months. Most of the women (83.3%) also reported ever having gone out dancing or drinking, with 80.7% of them (*n* = 559) reporting having done so in the previous 3 months.

A history of methamphetamine use was reported by 18% of the women. Of these, 79.3% reported having used the drug at least once during the past 3 months. Although a urine test detected evidence of methamphetamine use in 49, or 5.9%, of the total sample, in the ACASI computer survey, 8 of those testing positive (16.3% of all amphetamine-positive women) claimed they had never used the drug. Reported use of marijuana and opiates was lower. Thirty (3.6%) of the 832 women reported ever having used marijuana, with 6 reporting use during the previous 3 months.

**Table IV.** Simple and Adjusted Odds Ratios for Factors Associated with Ever Having Had Sexual Intercourse Among Female Vocational Students, Chiang Rai, Thailand ( $N = 832$ )<sup>a</sup>

	<i>n</i>	Percent ever had sexual intercourse	Simple unadjusted OR	Adjusted OR	95% CI AOR
Age (years)					
19–22	393	52.4	2.06***	NS	—
15–18	439	34.9			
Education					
Attends postsecondary school	399	52.6	2.12***	2.02*	(1.16–3.50)
Attends senior secondary school	433	34.4			
Lives with family members or relative					
Yes	529	36.3	0.46***	0.60**	(0.44–0.84)
No	303	55.1			
Has family member as confidante					
Yes	638	39.2	0.50***	0.60**	(0.41–0.86)
No	194	56.2			
Ever forced to have sexual contact or intercourse against will					
Yes	175	73.1	5.02***	4.35***	(2.92–6.49)
No	657	35.2			
Ever used methamphetamine					
Yes	150	62.0	2.55***	1.78*	(1.15–2.76)
No	682	39.0			
Ever used marijuana					
Yes	30	76.7	4.56***	NS	—
No	802	41.9			
Drank more than 3 drinks at one time in past 3 months					
9+ times	125	66.4	3.09***	1.84**	(1.17–2.90)
0–8 times	707	39.0			
Went out dancing and/or drinking in past 3 months					
Yes	559	49.7	2.35***	1.57*	(1.10–2.23)
No	273	29.7			
Perceives self to be at risk for getting HIV in the future					
High to very high	62	56.5	1.78*	NS	—
Low to intermediate	770	42.1			
Perceives self to be at risk for getting an STD in the future					
High to very high	29	62.1	2.22*	NS	—
Low to intermediate	803	42.5			

<sup>a</sup>OR, Odds ratio; CI, confidence interval.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Four women (0.5%) reported ever having used opiates, with 1 reporting use during the past 3 months. Four women reported ever having injected drugs, 2 of whom also reported a history of opiate use. None of the urine samples collected from these young women were opiate-positive.

## Univariate and Multivariate Analyses

### Factors Associated with Sexual Experience

Univariate analyses indicate that women 19 years or older, those in postsecondary levels of the vocational schools, ones with a reported history of alcohol and drug use, and those who perceive themselves vul-

nerable to HIV and STDs in the future were more likely than their counterparts to have had sexual intercourse (Table IV). Conversely, living with one's parents or a relative and having a family member to confide in were associated with lower levels of sexual experience. However, when entered into the logistic regression model, age, history of marijuana use, and perceptions of one's own vulnerability to being infected with HIV or STDs in the future ceased to be significantly associated with having had sexual intercourse.

Having had sexual intercourse for the first time at the age of 16 or younger was associated with having been coerced into sexual intercourse by an acquaintance (adjusted odds ratio [AOR] = 2.70,  $p < .05$ ). Women who lived with their parents or a relative

**Table V.** Simple and Adjusted Odd Ratios for Factors Associated with Having Two or More Steady Male Partners in One's Lifetime Among Female Vocational Students Who Have Ever Had Sexual Intercourse, Chiang Rai, Thailand ( $N = 359$ )

	<i>n</i>	Percent had 2+ male partner in lifetime	Simple unadjusted OR	Adjusted OR	95% CI AOR
Age at first sex (years)					
13–16	78	61.5	1.78*	NS	—
17+	281	47.3			
Number of casual male partners in lifetime					
1+	50	82.0	5.50***	4.76**	(1.66–13.64)
None	309	45.3			
Had sexual intercourse with casual male partner in past 3 months					
Yes	23	78.3	3.82**	NS	—
No	336	48.5			
Went out dancing or drinking in past 3 months					
Yes	278	55.0	2.32**	1.66 <sup>+</sup>	(0.95–3.00)
No	81	34.6			
Had 3 or more drinks at one time in past 3 months					
9+ times	83	68.7	2.69***	NS	—
0–8 times	276	44.9			
Ever forced to have sexual contact or intercourse against will					
Yes	128	60.9	1.94**	NS	—
No	231	44.6			
Ever forced to have sexual intercourse by a known acquaintance					
Yes	46	73.9	3.20**	NS	—
No	313	47.0			
Ever used methamphetamine					
Yes	93	75.3	4.25***	3.42***	(1.92–6.10)
No	266	41.7			
Ever used marijuana					
Yes	23	69.6	2.37 <sup>+</sup>	NS	—
No	336	49.1			

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>+</sup>  $p < .10$ .

were half as likely as those who did not to have (had their first experience before the age of 17 (AOR = 0.47,  $p < .05$ ).

#### *Factors Associated with Having Multiple Partners*

Nine factors emerged as significantly associated with having two or more steady sexual partner in one's lifetime in univariate analyses (Table V). Only two factors remained strongly associated with having two or more steady sex partners in the logistic regression model: methamphetamine use (AOR = 3.42,  $p < .001$ ) and having had at least one casual sexual partner (AOR = 4.76,  $p < .01$ ). Having gone out dancing or drinking was also associated with having multiple sex partners, but at a nonsignificant level (AOR = 1.66;  $p < .09$ ). To better characterize this subset of sexually active women, subsequent logistic regression analyses were conducted, comparing those who ever had a casual sexual partner with those who had not. Having drunk more than three drinks at one

time in the past 3 months (AOR = 3.24,  $p < .001$ ) and having two or more steady male partners (AOR = 3.83,  $p < .01$ ) were strongly associated with having had casual sex. Being coerced into sex by an acquaintance was also associated with having had a casual sexual partner, although this was only a nearly significant trend (AOR = 2.41,  $p < .08$ ). Living with a parent or a relative decreased the likelihood that one had ever had a casual sexual partner (AOR = 0.45,  $p < .05$ )

#### *Factors Associated with Ever Being Pregnant*

Eight factors emerged as significantly associated with having been pregnant: being 19 years or older, being currently enrolled in a postsecondary vocational school, being sexually active in the past 3 months, ever having been forced to have sexual contact or intercourse against one's will, being coerced into sexual intercourse by a known acquaintance, ever having taken a blood test for HIV, ever having had a sore or ulcer on the genitals, and currently using a method

to prevent pregnancy. In the multivariate model, having had sexual intercourse in the past 3 months (AOR = 2.68,  $p < .05$ ), ever having been forced to have sexual contact or intercourse against one's will (AOR = 2.03,  $p < .05$ ), having had a blood test for HIV (AOR = 2.22,  $p < .05$ ), and currently using a method to prevent pregnancy (AOR = 1.84,  $p < .05$ ) remained associated with pregnancy.

## DISCUSSION

This study brings together biological, sociological, and behavioral information on sexual health risk among young Thai women who are not FSWs, a population that has not received sufficient research attention. Our results indicate that this population of young Thai women frequently engage in or are subjected to a variety of risk-taking behaviors that may expose them to the risk of HIV, STDs, and unintended pregnancies in the future. These include unprotected intercourse, sexual coercion, low levels of contraceptive use, and drug and alcohol use.

Although a substantial proportion of the female respondents are sexually active, consistent condom use is low and the majority do not perceive themselves to be at high risk for acquiring HIV or an STD in the future. Results of qualitative in-depth interviews and focus group discussions with young Thai women elsewhere in Thailand suggest that previous prevention efforts inadvertently conveyed the message that only high risk groups such as FSWs and their clients could become infected (Cash *et al.*, 1997; Havanon *et al.*, 1993; VanLandingham *et al.*, 1995). It is possible that similar factors underlie these students' self-perceptions of their invulnerability to HIV and STD risk, although further in-depth inquiries are needed to substantiate this. Moreover, the small proportion of sexually experienced women who reported having used a condom during first sexual intercourse may be an indication that a similar trend in unprotected first intercourse will be repeated when the female students who are currently sexually inexperienced eventually become sexually active.

Unprotected intercourse in sexually coercive situations also emerged as an important problem. That two fifths of forced sexual encounters were with a young woman's steady partner or a known acquaintance was also troubling. This suggests, as studies elsewhere in Thailand also have, that sexually coercive sexual encounters may be a significant

factor in young women's exposure to sexual health risks (Cash *et al.*, 1997; Havanon, 1996; Ford and Kittisuksathit, 1994; Gray and Punpuing, 1999; Soonthorndhada, 1996; Xu *et al.*, 2000). Health interventions that seek to improve young women's sexual health outcomes by addressing the issue of sexual coercion must involve men as well as women in the process.

Our study's finding that half of the sexually active women were not using contraceptives highlights another area of concern. This result is remarkable given the history of success in terms of the acceptability, availability, and utilization of family planning in Thailand (Knodel *et al.*, 1996a). Recent critiques of family planning services in Thailand, however, indicate that most contraceptive efforts have concentrated on married women. This gap leaves many questions about the availability of contraceptives to unmarried women unanswered (Gray and Punpuing, 1999), although some existing research indicates that young women would like to have more access to contraceptive information and services (Soonthorndhada, 1996). Our finding that over one fourth of the sexually active students had been pregnant and that the majority of them chose to terminate their pregnancies is especially notable. Abortion is not legal in Thailand, and there are serious health consequences associated with unsafe, illegal abortion (World Health Organization, 1997). Little previous research has looked at abortion, although available data suggest that unintended pregnancies resulting in abortion have been observed at levels similar to those obtained in our findings (see reviews in Soonthorndhada, 1996; Gray and Punpuing, 1999).

Although most of the respondents' partners in this study were similar in age and occupation, and age at sexual initiation was not significantly related to partners' age, it is worth noting that a subgroup, approximately one fourth, had partners who were at least 4 years older. However, in contrast to some studies elsewhere (e.g., sub-Saharan Africa; Heiss and Elias 1995; Raffaelli and Pranke, 1995), there were no associations between older partner age and young women's increased exposure to sexual health risks such as younger age at sexual initiation and a history of being sexually coerced (Similarly, there were no associations between older partner age and a young woman's history of drug and alcohol use or a history of pregnancy found.) However, an association between an increased risk of chlamydial infection and older partner age was found in this sample and this has been reported elsewhere (Paz-Bailey *et al.*, 2001). It

is possible that a general similarity in partner age is a protective factor against the transmission of HIV and STDs in this population, especially given the declining patronage of female sexual workers reported in several other studies of young Thai men (Celentano *et al.*, 1998; Jenkins *et al.*, 1999; Kitsiripornchai *et al.*, 1998).

An association between drug and alcohol use and a history of sexual intercourse was found. Similar associations have been reported elsewhere in Thailand (Havanon *et al.*, 1993; Soonthornhdada, 1996). This history of substance use may be a reflection of risk-taking behavior as it relates to sex, and ultimately, to transmission of HIV, STDs, and unintended pregnancy (Cash *et al.*, 1997). Although the prevalence of HIV in this sample of female students was low, it is noteworthy that among three confirmed cases of HIV, two of the young women had never had a casual sexual partner in their lifetime nor had accepted gifts or money in exchange for sex. Other studies of HIV infection among Thai women not involved in sex work have reported similar findings (Siriwasin *et al.*, 1998; Xu *et al.*, 2000).

There are some limitations to this study that are important to note. Because it was conducted in vocational and commercial school settings that had not been randomly selected, our findings may not be representative for the population of adolescents and young adults at large. However, of the 7.5 million Thais in the 15- to 21-year age group, about 2.5 million (33%) are attending upper secondary and higher education, which includes vocational and commercial schools (Anonymous, 1997). Thus, although it may not be statistically representative of the entire population, our results may generalize to an important and growing segment of the young Thai population. Vocational schools generally train people for semiskilled and skilled manual and technical occupations, whereas commercial schools provide training for clerical, computer, and low-level management positions. For many students, these occupations represent upward socioeconomic mobility and this is likely to be true in our sample, wherein most students had come from agricultural backgrounds. The proportion of students from farming families was similar to that in Thailand as a whole, so the sample may be particularly important as a snapshot of sexual behavior in a large segment of the population that is moving from farm and village to urban settings and occupations.

Relatively few studies have assessed sexual behavior in young Thai women and comparisons of

results are made difficult by differences in methodology and the use of small samples and/or nonsystematic sampling methods. Studies using face-to-face interview methods generally have yielded very low reports of sexual experience in young women, typically 10% or less (Mills *et al.*, 1997; Sittitrai *et al.*, 1992; Xenos *et al.*, 1993), whereas studies that used more private methods such as self-administered questionnaires have obtained prevalences of sexual experience in the neighborhood of 30% (Podhisita and Pattaravanich, 1995; Xenos *et al.*, 1993). One exception is Soonthornhdada's (1996) study of factory workers and students, which found much lower levels of experience. However, that study involved considerable proctoring of questionnaire administration and this may have depressed levels of reported sexual experience. Research that used more qualitative methods and asked about sexual experience in defined populations such as workers' dormitories suggested that about half of those in this population were sexually active (Cash, 1995).

Overall, the prevalence of sexual experience here appears higher than the levels found in other studies using relatively private methods (though lower than qualitative information might suggest). Few data exist on alcohol use among young women in Thailand; however, the level of use here also was higher than available data suggest (Podhisita and Pataravanich, 1995). The privacy provided by the ACASI method and our avoidance of identifying information may account for the higher level of reported sexual experience here. Significantly, we obtained a very high level of participation, even though we had provided multiple ways for respondents to decline participation, which may reflect our use of relatively anonymous data collection methods. One concern may be the persistence of underreporting of sexual behavior because of the continuing stigma attached to its discussion by young women in Thailand (Bond *et al.*, 1999; Cash *et al.*, 1997; Ford and Kittisuksathit, 1994; Havanon, 1996; Havanon *et al.*, 1993; Mills *et al.*, 1997; Knodel *et al.*, 1996b; Podhisita and Pattaravanich, 1995; Weiss *et al.*, 1996; Xenos *et al.*, 1993; Xu *et al.*, 2000). Another stigmatized behavior, use of methamphetamine, appeared to have been somewhat underestimated in our study. About one sixth of the young women who tested positive for methamphetamine had denied using it (however, these discrepancies are much smaller than those commonly obtained with other self-report methods; Fendrich *et al.*, 1999; Feucht *et al.*, 1994). On the other hand, the prevalences of pregnancy and abortion were

similar to the limited available findings (reviewed in Soonthornhdhada, 1996 Gray; and Punpuing, 1999) and the age at first sex here was only slightly lower than in other available population-based research (Podhisita and Pattaravanich, 1995). One conjecture is that, to the extent that it remains difficult for young Thai women to discuss sexuality, we may have obtained some underestimates of some of their sexual behavior.

Although this study has provided a breadth of information on sexual risk-taking behavior in an understudied population of Thai women, many questions regarding these young women's sexual health concerns, their perceptions of risk, their knowledge about sexual health, and their access to sexual health services and family planning remain unanswered. Of particular concern were the deficits in knowledge regarding maternal-child transmission of STDs and STD-induced infertility, as well as the amount of unintended pregnancy and use of illegal abortion. Insight into these issues will help ensure that future health interventions effectively address these young women's needs. For example, a recent review of studies that have assessed Thai adolescents' knowledge of sexual and reproductive health issues notes the presence of significant deficits in knowledge about sex and reproduction within this population (Gray and Punpuing, 1999). Qualitative studies that have explored women's sexual and reproductive knowledge both within and outside of Thailand often highlight the key role female family members, friends, peers, and co-workers play in passing such information on to each other (Allen, 2000; Bond *et al.*, 1999; Cash *et al.*, 1997; Nishimo and Schnuck, 1997; Weiss *et al.*, 1996). In some cases, the knowledge shared among women is consistent with scientific knowledge; in other cases the knowledge passed on may be misinformed (Thongkrajai *et al.*, 1996; Boonmongkon *et al.*, 1998). Although some studies have examined networks of sexual information-sharing among unmarried female factory workers in Thailand (e.g., Cash, 1995), our study did not assess such networks and their relevance for female secondary students.

The results of this study indicate that a variety of sexual risk-taking behaviors is present within this population of young Thai women. In-depth information on their knowledge of these risks as well as the factors that inhibit their ability to prevent them is needed if interventions to reduce HIV/STD risk and unintended pregnancies within this vulnerable population are to be effective.

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