Past and Current STDs in a Thai Adolescent Population

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Abstract

The study of premarital sexual intercourse in 350 Thai students aged 18-20 years in commercial schools showed that 151 subjects (43.1%) having premarital sexual intercourse - 50.3 per cent never used condoms, 25.8 per cent used sometimes and 23.8 per cent used everytime. Their sexual partners were girl friends in 78.1 per cent and sex workers in 18.5 per cent. The average age of first sexual intercourse was 16.6 years. There were 87 subjects who had symptoms similar to sexually transmitted diseases. Single void-urine was tested for past and present *C. trachomatis* infection. There were 8 of 350 subjects (2.3%) with positive results for the leukocyte esterase activity in urine samples but only 2 cases (0.6%) were positive for *C. trachomatis* antigen and antibody. Detection of *C. trachomatis* DNA was negative in all urine samples. The antibody detection in urine samples was 11.1 per cent and in blood samples 22 per cent. There was no correlation with r = 0.3 of optical density values between urine and blood samples.

Key word : Adolescent, Premarital Sexual Intercourse, *Chlamydial trachomatis*, Single Void-urine.

Sexually transmitted diseases through commercial sex have become of great concern in Thailand. In general, premarital sexual activity is only acceptable among Thai males but strongly discouraged for females. The result of the previous study[1] (Koetsawong, 1987) revealed that 5 per cent of adolescent girls under 20 years old and 8 per cent of those 20 and over were sexually active. As for male students of the same age groups, the percentages were 45 per cent and 68 per cent respectively.

Male adolescents tend to seek premarital sexual experience from prostitutes and thus are easily exposed to STDs. Especially, a high proportion of those sexually active males had intercourse with

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prostitutes without STDs prevention. Vincetette[2] et al reported that saymptomatic chlamydial infection in males aged less than 25 years, 25-34 years and more than 34 years was 11.8 per cent, 5.7 per cent and 0.6 per cent respectively. Therefore, screening for chlamydial infection in the high risk male group aged less than 34 years is very beneficial.

Chlamydial infection is a significant pathogen which may go unrecognized and untreated because we cannot stain the pathogen with ordinary staining making diagnosis quite difficult[3]. For viral STDs, there would be long-term problems but the disease could not be cured. In cases of chlamydial infection, McCormark[4] said that it might have serous short-term and long-term problems but it could be cured. Chlamydial infection can effect various pathological changes. The most important one is the genito-urinary tract in both males and females which has a long-term effect on infertility. It was found that infertility resulted from *chlamydial trachomatis* exposed to the cervix or endometrium repeatedly or from the immunity to spermatozoa which it produced[5]. Infection of *C. trachomatis* is caused by the antibody which can be detected in blood testing and can easily be treated. For adolescents and young adults, the detection of *C. trachomatis* infection will help to prevent infertility before marriage.

Objective

This pilot study aimed to assess the incidence of STDs especially chlamydial infection among male adolescents and young adults, the age of sharp rise in incidence of STDs and effective education.

Specimen Collection and Laboratory Procedure

Approximately 30 ml of single void-urine was collected in 50 ml sterile plastic containers, kept in an ice-box and processed in the laboratory within 4 hours after collection. Five ml of urine was used for the leukocyte esterase dipstick test. Urine specimens (about 25 ml) were centrifuged at 1,500 rpm for 20 minutes at 4°C. One ml of each urine supernatant was kept at -20°C for *C. trachomatis* antibody determination using enzyme-linked immunosorbent assay (ELISA) (panBio, Australia). Urine deposits were resuspended in 250 ml. Of phosphate buffered saline (PBS), pH 7.2. A 125 μl. of each suspension was centrifuged, washed with PBS and then centri-

fuged again. The deposits were resuspended in 100 ml of distilled water and stored at -70°C for *C. trachomatis* DNA detection using polymerize chain reaction (PCR). The remaining 125 μl of all deposits was added to 875 μl. of IDELA antigen transport medium for detection of chlamydia antigen using ELISA (IDELA[TM], Dako, United Kingdom).

Serum samples were tested for detection of antibody to *C. trachomatis* in parallel of urine samples by the ELISA technique. The cell suspension was treated with PCR lysis solution. After incubation for one hour at 60°C, the specimen was boiled at 95°-100°C for 10 minutes. The two-stage PCR was based on the gene encoding the clamydial major outer membrane protein (MOMP). In the first PCR, the entire coding sequences of the gene were amplified using primers FLS and FLA. Primers NEST2 and NEST4 were used in the nested PCR and the amplified product was 345 bp.

METHOD

Three hundred and fifty students of 18-20 years from a commercial school were selected and divided into three groups; 100 subjects aged 18 years, 100 subjects aged 19 years and 150 subjects aged 20 years. History of previous sexual activity, STDs and genital ulcer was recorded. Thirty ml of urine was collected for chlamydial antigen detection and 10 ml. Blood for VDRL, anti-HIV, hepatitis B antigen, blood group and serologic test for chlamydial infection. A test of chlamydial trachomatis antigen in urine was also performed.

RESULTS

From 1993 to 1994 350 subjects aged 18-20 years were selected from 3 commercial schools, 100 subjects aged 18 years, 100 subjects aged 19 years and 150 subjects aged 20 years. There were 151 subjects (43.1%) having premarital sexual intercourse. Of this number, 28 subjects (28%) were in the 18-year group, 30 subjects (30%) in the 19-year group and 93 subjects (62%) in the 20-year group (Table 1). For sexual partners, 28 of 151 subjects (18.5%) had sexual intercourse with sex warkers, 118 subjects (78.1%) had sexual intercourse with girl friends, only one case was homosexual and 4 subjects did not know whether their partners were sex-workers or girl friends (Table 2). For the lowest age having first sexual intercourse, there were 30 subjects (19.9%) having first sexual intercourse at the age of

Table 1.   Having sexual intercourse by age.

Age	18 - year		19 - year		20- year		Total	
	No.	%	No.	%	No.	%	No.	%
No	72	72.0	70	70.0	57	38.0	199	56.9
Yes	28	28.0	30	30.0	93*	62.0	151	43.1
Total	100	28.7	100	30.0	150	42.9	350	100.0

* P <.0001

Table 2.   Having sexual intercourse with.

	18 - year		19 - year		20- year		Total	
	No.	%	No.	%	No.	%	No.	%
Sex worker	5	17.9	5	16.7	18	19.6	28	18.5
Girl friend	22	78.5	25	83.3	71	77.2	118	78.1
Boy friend	1	3.6	-	-	-	-	1	0.7
Other	-	-	-	-	4	3.3	4	2.7
Total	28	18.5	30	19.9	93	61.6	151	100.0

Table 3.   Age of first sexual intercouse.

Age of having first sexual intercourse	18 - year		19 - year		20- year		Total	
	No.	%	No.	%	No.	%	No.	%
≤ 15	9*	32.1	6	20.0	15	16.1	30	19.9
16 - 183	19	67.9	24	80.0	60	64.5	100	66.2
≥ 19	-	-	-	-	16	17.2	16	10.6
Unknow	-	-	-	-	2	2.2	2	1.3
Total	28	100	30	20.5	93	100	151	100.0

* P < 0.01

15 or below and the youngest one was 12 years old; 100 subjects (66.2%) having first sexual intercourse between 16-18 years old and 16 subjects (10.6%) having first sexual intercourse at nineteen or more (Table 3).

During the period of the last three months before this study, 80 of the total 151 subjects (53.0%) had sexual intercoures 53.6 per cent in the 18-year group, 63.3 per cent in the 19-year group and 49.5 per cent in the 20-year group (Table 4). On the use of condoms, 50.3 per cent of them did not use condoms, 25.8 per cent used them sometimes and 23.8 per cent used them every time (Table 5). Eighty-seven subjects had symptoms similar to sexually transmitted diseases, 41.4 per cent having inguinal mass, 21.8 per cent having dysuria and only 4.6 per cent having purulent discharge (Table 6).

There were 8 (2.3%) leukocyte esterase activity positive, 2 (0.6%) were positive for both antigen and antibody, the rest had positive antibodies in the urine samples. The results of detection of *C. trachomatis* antibody in urine and blood from 127 subjects was 11.1 per cent (7 of 63 cases) and 22 per cent (28 of 127 cases) respectively. When comparing antibody in urine and blood samples there was no correlation (r=0.03). The result of *C. trachomatis* DNA in the urine of 350 subjects was negative (Table 7, 8).

Blood testing for VDRL was negative and only one case was positive for anti-HIV.

Table 4.   Having sexual intercourse in the last 3 months.

	18 - year		19 - year		20- year		Total	
	No.	%	No.	%	No.	%	No.	%
No	13	46.4	11	36.7	47	50.5	71	47.0
Yes	15	53.6	19	63.3	46	49.5	80	53.0
Total	28	18.5	30	19.9	93	61.6	151	100.0

Table 5.   Condom use for sexual intercourse.

	18 - year		19 - year		20- year		Total	
	No.	%	No.	%	No.	%	No.	%
No	17	60.7	15	50.0	44	46.7	76	50.3
Sometimes	6	21.4	6	20.0	27	29.3	39	25.8
Everytimes	5	17.9	9	30.0	22	23.9	36	23.8
Total	28	18.5	30	19.9	93	61.6	151	100.0

Table 6.   Having symptoms of STDs.

	No treatment		Drug store		Doctor		Total	
	No.	%	No.	%	No.	%	No.	%
Dysuria	10	52.6	5	26.3	4	21.1	19	21.8
Hematuria	2	66.6	1	33.3	-	-	3	3.4
Purulent discharge	-	-	2	50.0	2	50.0	4	4.6
Genital ulcer	7	58.3	2	16.7	3	25.0	12	13.8
Inguinal mass	26	72.2	7	19.4	3	8.3	36	41.4
Rash	9	69.2	3	23.1	1	7.8	13	14.6
Total	54	64.3	20	23.8	13	11.9	87	100.0

May having more than one/symptoms

Table 7.   Antigen detection, antibody determination DNA detection of *C. trachomatis* infection.

Sample	No. of positive/tested case (%)		
	Antigen	Antibody	DNA
Urine	2/350 (0.6%)	7/63 (11.1%)	0/350 (0%)
Blood	*NA	28/127 (22%)	*NA

* NA = not available

DISCUSSION

The study showed that male adolescents and young adults aged 18-20 years were sexually active. There were 43.1 per cent having sexual intercourse-28 per cent in the 18-year group, 30 per cent in the 19-year and 62 per cent in the 20-year group which was the highest. This study showed that there were 78.1 per cent and 18.5 per cent having sexual intercourse with girl friends and sex workers respectively. Compared with a previous study of Koetsawang et al[1] from 1983 to 1985 in adolescents and

Table 8. Comparision of results of leukocyte esterase activity, antigen and antibody detection in urine samples and antibody detection in blood samples.

Leukocyte Esterase activity N = 350	Ag. Detection in urine N = 350				Ab. Detection in urine N = 63				Ab. Detection in blood N = 127			
	Positive		Negative		Positive		Negative		Positive		Negative	
	No	%	No	%	No	%	No	%	No	%	No	%
Positive 8 (2.3%)	2	0.6	6	1.7	3	4.8	5	7.9	8	6.3	-	-
Negative 342 (97.7%)	-	-	342	97.7	4	6.3	51	81.0	20	15.7	99	78.0
Total	2	0.6	348	99.4	7	11.1	56	88.9	28	22.0	99	78.0

Table 9. Age of first sexual intercourse.

	18 - year		19 - year		20 - year		Total	
	No.	%	No.	%	No.	%	No.	%
12	-		1	3.3	1	1.1	2	1.3
13	-		-		1	1.1	1	0.7
14	1	3.6	2	6.7	1	1.1	4	2.6
15	8	28.6	3	10.0	12	13.0	23	15.2
16	9	32.1	9	30.0	21	22.8	39	25.8
17	7	25.0	10	33.3	21	22.8	38	25.2
18	3	10.7	5	16.7	18	19.6	26	17.2
19			-		14	15.2	14	9.3
20			-		2	2.1	2	1.3
Unknown			-		2	1.1	2	1.3
Total	28	18.6	30	20.0	93	16.3	151	100

young adults the results were that 55.2 per cent in the 19-year and below group had sexual intercourse; 20.6 per cent with girl friends and 64.6 per cent with sex workers. In the 20-year and higher group 58.2 per cent had sexual intercourse; 17.3 per cent with girl friends and 67.1 per cent with sex workers. This study showed that the percentage of adolescents and young adults having premarital sex had decreased but sexual partners were girl friends more often than sex workers. This might be because they were afraid of AIDS.

Although the previous study showed that only 34.0 per cent did not use condoms and in this study 50.3 per cent had unprotected sexual intercourse, the sexual health symptoms in the previous study was 45.7 per cent but in this study it was only 24.9 per cent. Such results were due to the fact that they turned to their girl friends for sexual intercourse more often than to sex workers. Moreover,

half of them did not use condoms. This will create a new problem of premarital pregnancy in their girl friends because of an unprotected pregnancy. Therefore, an active health education program should be implemented to increase the use of condoms in order to mitigate such a social problem.

Nguyet et al[6] reported that male adolescents in suburban areas had their first sexual intercourse at the average age of 13.9 years and 60 per cent used condoms; condoms were used in the 12-13 years group more often than in the 14-year group. In our study, the average age of first sexual intercourse was 16.6 years but the use of condoms was only 49.6 per cent; the youngest group used condoms less often than the elder one.

Domeika et al[7] reported the detection of C. trachomatis antigen in single-void urine which was 0.4 per cent in the low-risk group and 58.6 per cent in the high-risk group; however, Gene et al[8]

reported 2-10 per cent. In our study, only 2 from 350 male adolescents (0.6%) were positive for *C. trachomatis* antigen in single-void urine. The antibody of *C. trachomatis* detected in urine and blood samples was 11.1 and 22 per cent without correlation with r=0.3 of the optical density value between urine and blood samples. For leukocyte esterase activity in urine samples only 8 from 350 cases were positive, 2 were positive for both antigen and antibody and 6 were positive for antibody. None of the urine samples was positive for *C. trachomatis* DNA detection. Such results show that detection of *C. trachomatis* in single-void urine is simple and easy but less sensitive compared to blood testing.

SUMMARY

This study showed that premarital sexual intercourse in adolescents decreased from 55.2 per cent in the past ten years to 43.1 per cent and the sexual health symptoms decreased from 45.7 per cent to 24.9 per cent. The most important problem will be premarital pregnancy because sexual partners have changed from 20.6 per cent with girl friends and 64.6 per cent with sex workers to 78.1 per cent with girl friends and 18.5 per cent with sex workers. Blood testing for *C. trachomatis* infection should be done for infertile couples or premarital checkup to prevent infertility after marriage because *C. trachomatis* infection can be treated.

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การติดเชื้อกามโรคในกลุ่มวัยรุ่นไทย

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     ผลการศึกษาการมีเพศสัมพันธ์ในนักเรียนไทย อายุระหว่าง 18-20 ปี จำนวน 350 คน พบว่า 151 คน (43.1%) มีเพศสัมพันธ์มาแล้วโดยที่ 50.3% ของผู้ที่เคยมีเพศสัมพันธ์ไม่เคยใช้ถุงยางอนามัย 25.8% ใช้ถุงยางอนามัยบางครั้งและมีเพียง 23.8% ใช้ถุงยางอนามัยทุกครั้ง ผลการศึกษาพบว่าอายุเฉลี่ยที่เด็กเหล่านี้มีเพศสัมพันธ์ครั้งแรกคือ 16.6 ปี มีนักเรียน 87 คน ที่มีอาการคล้ายกับมีโรคติดต่อทางเพศสัมพันธ์ จากการตรวจปัสสาวะเพื่อค้นหาการติดเชื้อ *ฆลาไมเดีย ทราโคมาตีส* ทั้งที่เป็นการเพิ่งติดเชื้อ และเคยติดเชื้อมานานแล้ว พบว่ามีนักเรียนเพียง 8 ใน 350 ราย ที่ตรวจปัสสาวะพบว่าเคยติดเชื้อฆลาไมเดีย ซึ่งคิดเป็นร้อยละ 2.3 ในจำนวนนี้มีเพียง 2 ราย (0.6%) ตรวจพบทั้ง antigen และ antibody แสดงว่าเพิ่งมีการติดเชื้อฆลาไมเดียจากการตรวจหา DNA ในปัสสาวะทุกรายให้ผลลบ ผลการตรวจ antibody ของฆลาไมเดียในปัสสาวะ และในเลือดพบว่าร้อยละ 11.1 ตรวจพบ antibody ในปัสสาวะและร้อยละ 22 ตรวจพบ antibody ในเลือด ซึ่งผลการตรวจทั้งในปัสสาวะและในเลือดไม่มีความสัมพันธ์กันโดยค่า r = 0.3

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