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Chlamydia trachomatis infection in Thai female sex workers.

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The present study was conducted to determine the prevalence of Chlamydia trachomatis infection in 71 prostitutes who worked in five massage parlors in Bangkok, Thailand. Chlamydia from the endocervix was identified by amplification ELISA technique, and serology for antibody IgG and IgM to C. trachomatis was also performed. This study determined that the prevalence of genital chlamydial infection was 29.6 per cent (21/71 cases) in the aforementioned subjects. The seroprevalence of C. trachomatis infection was 94.4 per cent (67.71 cases). It is suggested that the prevalence of genital chlamydial infection in prostitutes is very high and that infection is always repeated. It also implies that the general Thai adult population has a high prevalence of this kind of sexually transmitted disease because visits to prostitutes are common among Thai men.

Key words: Thai female sex worker, Prostitutes, Chlamydia trachomatis, Prevalence.

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สมชัย นวัตกรรมศาสตร์, ผ่องพรรณ นันทากิจสุทธิ, นเรศ สุขเจริญ, นิมิตร เทชไกรชนะ. การติดเชื้อคลามัยเดีย
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ผู้รายงานได้ทำการศึกษาความชุกของการติดเชื้อคลามัยเดีย ทราโคมาติส ในหญิงบริการ อาบ อบ นวด
ในกรุงเทพมหานคร จำนวน 5 แห่ง ได้อาสาสมัครจำนวน 71 ราย เพื่อตรวจหาเชื้อคลามัยเดีย ทราโคมาติส
จากปากมดลูกโดยวิธี Amplification ELISA และตรวจหาการติดเชื้อคลามัยเดีย ทราโคมาติส ทางซีโรโลยี
ผลการศึกษาพบว่า ความชุกของการติดเชื้อคลามัยเดีย ทราโคมาติสของปากมดลูกในหญิงบริการเท่ากับ
ร้อยละ 29.6 (21/71 ราย) และความชุกทางซีโรโลยีของการติดเชื้อคลามัยเดีย ทราโคมาติส เท่ากับร้อยละ 94.4
(67/71 ราย) ผู้รายงานมีความเห็นว่าความชุกของการติดเชื้อคลามัยเดีย ทราโคมาติส ในหญิงบริการมีสูงมาก
และการติดเชื้อจะเป็นข้อบ่งชี้เนื่องจากผลทางซีโรโลยีให้ผลบวกเกือบทุกราย

Chlamydia trachomatis infection is one of the common sexually transmitted diseases (STDs) in all countries. The incidence has been reported to vary from 18 to 33.3 per cent of female patients who attended STD clinics.⁽¹⁻³⁾ The role of prostitutes in the transmission of venereal diseases is well known. However, the prevalence of *C. trachomatis* infection in prostitutes is scanty. In Thailand, where female prostitution is common in spite of its illegality, this specific group of women comprise the main source of STDs and their transmission to the general population. The present study was conducted to determine the prevalence of *C. trachomatis* infection in this group.

Material and method

This study recruited 71 volunteers from prostitutes in five massage parlors in Bangkok during June 1990. They were checked regularly twice a week in a clinic in their place of work for signs of vaginitis and gonococcal infection by gram staining. The volunteers were asked to sign informed consent forms and were interviewed about their social background. All of the women were asymptomatic for genital infection. Pelvic examination and sample collection from the endocervical canal for identifying *Chlamydia trachomatis* and *Neisseria gonorrhoeae* were performed by a trained nurse. At the same time, blood was drawn for serological testing for *C. trachomatis* antibody IgG and IgM.

Endocervical canal samples for identifying *C. trachomatis* were taken by using an IDEIA™ *Chlamydia* transportation kit. A cotton swab was inserted in the endocervical canal to collect endocervical cells. Cotton swabs with samples were put into

the vials of transport media provided in the kit and sent to the laboratory where the presence of *Chlamydia* was identified by monoclonal antibody, using amplification ELISA technique (Novo Biolab, Cambridge, United Kingdom).

Serological testing for *C. trachomatis* infection was performed to identify type-specific antibody fraction IgG and IgM by the modified microimmunofluorescence (MIF) method. Antigens used in the test were pooled antigens, divided into three groups, provided by Washington Research Foundation, Seattle, USA. Normal yolk sac was used as a control.

Result

Table 1 shows the socio-demographic characteristics of the 71 volunteers. The women admitted to the study were young (mean age 20.42 ± 3.06 years). Three-fourths of the volunteers were between 18 and 22 years of age. Most of the volunteers were poorly educated, preponderantly single and nulligravid. Oral contraception was the most popular contraceptive practice among these women. Over two-thirds of the volunteers reported a previous history of sexually transmitted diseases. Duration of prostitution ranged between one month and 10 years. More than half of the volunteers had worked in a massage parlor for one year or less. The mean number of sexual contacts with clients per day was 3.65 ± 1.24 times (range 1–7 times per day). Three-fourths of the volunteers reported the number of sexual contacts with clients to be between three and five times per day. Use of condoms was inconsistent, as it depended on the client's preference.

Table 1. Socio-demographic characteristics.

Characteristic	N = 71 (%)	mean \pm SD	range
Age (years):		20.42 ± 3.06	16 – 30
< 18	7 (9.8)		
18 – 22	53 (74.7)		
> 22	11 (15.5)		
Education:		—	—
None	4 (5.6)		
Primary	53 (74.7)		
Secondary	14 (19.7)		
Literacy:		—	—
Illiterate	4 (5.6)		
Literate	67 (94.4)		

Table 1 (Continue). Socio-demographic characteristics.

Characteristic	N = 71 (%)	mean \pm SD	range
Marital status:		—	—
Single	46 (64.8)		
Married	14 (19.7)		
Divorced	11 (15.5)		
Contraceptive used:		—	—
None	5 (7.0)		
Oral	61 (86.0)		
Injectable	5 (7.0)		
Parity:	—	—	
Nulliparous	67 (94.4)		
1	4 (5.6)		
Previous history of STD:		—	—
None	21 (29.6)		
Yes	50 (70.4)		
Duration of prostitution:			
(Months)		15.73 \pm 14.85	1 – 120
1 – 6	27 (38.0)		
7 – 12	14 (19.7)		
13 – 18	4 (5.6)		
19 – 24	7 (9.9)		
> 24	19 (26.8)		
Average No. of sexual Intercourse with clients:		3.65 \pm 1.24	1 – 7
(times per day)			
1 – 2	13 (18.3)		
3 – 5	54 (76.1)		
> 5	4 (5.6)		

Table 2 shows microbiological and serological results for *C. trachomatis* and gonococcal infection. *C. trachomatis* infection was identified from the endocervical canal by ELISA technique in 21 cases, or 29.6 per cent of the total. *N. gonorrhoeae* was positive by culture from the endocervix in five cases, four of whom were coincidentally positive for *C. trachomatis* by ELISA.

Nearly all the women (94.4 per cent) were seropositive for antibody IgG to *C. trachomatis*. Titers of antibody IgG ranged from 1:32 to 1:1,024. There seemed to be no relationship between the duration of prostitution and seropositiveness for *C. trachomatis* antibody IgG. Antibody IgM was positive in only one case.

Table 2. Microbiological and serological results.

Result	Positive (%)	Negative (%)
Microbiological:		
<i>C. trachomatis</i> by ELISA	21 (29.6)	50 (70.4)
<i>N. gonorrhoeae</i> by Culture	5 (7.0)	66 (93.0)
Serological:		
<i>C. trachomatis</i> antibody IgG	67 (94.4)	4 (5.6)
<i>C. trachomatis</i> antibody IgM	1 (1.4)	70 (98.6)

Discussion

In Thailand, prostitution is common in spite of its illegality. It is the main source and means of spreading STDs to the general population, and causes short- and long-term health problems. *C. trachomatis* infection, one of the common sexually transmitted diseases, may cause no symptom in women or men when they become infected, but it can leave permanent lesions and cause health problems, especially in women, such as pelvic inflammatory disease, infertility, ectopic pregnancy and perinatal infection.⁽⁴⁾ Most studies for genital chlamydial infection have been done in STD clinics. However, studies to determine the prevalence of genital chlamydial infection among prostitutes are rare and difficult to carry out because they require the cooperation of the women concerned. Even though this study involved only a small number of volunteers, it might represent the suspected very high prevalence of this disease among Thai prostitutes.

The present study suggests that asymptomatic genital chlamydial infection is highly prevalent among female prostitutes in Thailand. The incidence was 29.6 percent of asymptomatic prostitutes; these women could infect their sexual partners. The serological evidence indicates that this group of women were at very high risk of becoming infected with *C. trachomatis* during their life. Nearly all of the women in this study were positive for antibody IgG to *C. trachomatis*. There seemed to be no relationship between seropositiveness and duration of prostitution. Compared with a study of women at a gynecologic outpatient clinic done by Nunthapisud et al. in 1988 at Chulalongkorn Hospital in Bangkok, 40 per cent of symptomatic women were seropositive for antibody

IgG to *C. trachomatis*.⁽⁵⁾ Interestingly, 19 cases, or 28.4 per cent of the total, of those with seropositive antibody IgG in this study reported no previous history of STD. This suggests that, even under high risk conditions, nearly one-third of the women who became infected with *C. trachomatis* have no symptoms.

In this study, asymptomatic gonococcal infection was found in only five cases, or 7 per cent of the total. This might be because women in this study were regularly checked by Gram staining by which gonococcal infection can be easily identified. Interestingly, four of the five cases who were positive for gonococcus also were positive for *C. trachomatis* infection, which is a higher incidence than that of another report.⁽⁶⁾ This could suggest that women who have a genital gonococcal infection have a high incidence of mixed infection with *C. trachomatis*.

The present study suggests that the prevalence of *Chlamydia trachomatis* infection is high among Thai prostitutes. It also implies a high prevalence in the Thai population because Thai men have frequent sexual contact with prostitutes. Thai men who visit prostitutes, even "high-class" prostitutes as in this study, have nearly a one out of three chance of having intercourse with a woman who carries *C. trachomatis* in her lower genital tract. Female prostitutes are really at very high risk of getting a *C. trachomatis* infection in their lifetime and such infection usually is repeated. The authors suggest that the proper method for detecting *C. trachomatis* infection in this specific group of women, and that education of the general population is a useful measure for controlling the spread of this disease.

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